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THIRTIETH ANNUAL REPORT

OF THE

State Department of Health

OF

NEW YORK

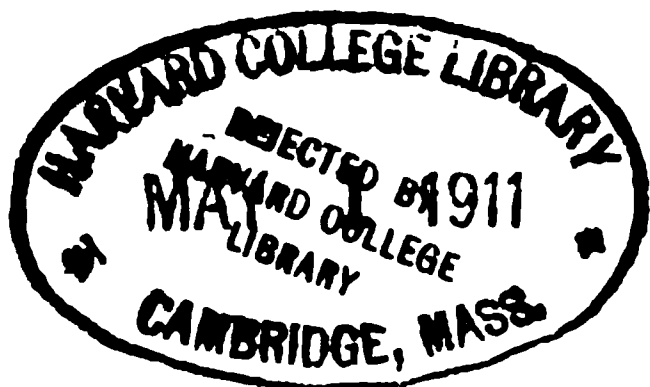
FOR THE YEAR ENDING DECEMBER 31, 1909

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FEBRUARY 21, 1910.

THIRTIETH ANNUAL REPORT

OF THE

STATE DEPARTMENT OF HEALTH

STATE OF NEW YORK,

EXECUTIVE CHAMBER,

ALBANY, *February* 21, 1910.

To the Legislature:

I have the honor to transmit herewith the thirtieth annual report of the State Commissioner of Health for the year 1909.

97437

CHARLES E. HUGHES.

NEW YORK STATE DEPARTMENT OF HEALTH

Division of Administration

Commissioner

EUGENE H. PORTER, M.D.

Secretary and Deputy Commissioner

ALEC H. SEYMOUR

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Director.....HILLS COLE, M.D.

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REPORT

TO HON. CHARLES EVANS HUGHES, *Governor of the State of New York, Albany, N. Y.:*

SIR:—I have the honor to transmit herewith the thirtieth annual report of the State Department of Health for the year 1909:

THE WIDER VIEW

The advance in sanitation is an index of the progress of modern civilization. The development and application of sanitary law is the result of an increasing altruistic knowledge.

Behind every movement for civic improvement, back of every effort for social or economic betterment, may always be found the moral impulse that stirs to action. Sanitation, with all its wealth of scientific achievement, with all its earnest and able workers, would never have made such rapid advance without the aid of an aroused and partially emancipated public sentiment. When many men thinking independently come to the same conclusion, action is likely to follow, and when men so thinking demand facts and carefully weigh the evidence there is likely to be action along right lines. Education is the dynamite of our civilization. It has broken some of the follies of superstition and ignorance and will break many more.

So education in sanitary science had not progressed very far before it was perceived that a great door had been opened for general betterment. Not merely stamping out of epidemics, the disposal of sewage or investigation of water supplies, important and urgently necessary as these are, but that wider field that embraces all that makes toward the absolute prevention of all misery and disease came clearly into view.

And so there came into being that great and increasing number of societies and organizations devoted entirely to changing the old order of things, working always for clean cities, clean homes, clean air, and also, therefore, for clean morals.

of water supplies in the State not protected by rules and regulations, having in view the double object of educating these municipalities and their municipal representatives as to sanitary principles controlling the purity of their supplies, and furnishing such information and data as would induce and enable them to make any desirable improvements of the supply.

This campaign for the better improvement of these two classes of water supplies has already proven of great good. In fact, it is practicable to estimate how much good, but, in view of the large number of sources of pollution that have been removed from the many protected supplies, and the willingness and promptness with which the recommendations of the Department have in many cases been carried out following the investigations and reports of water supplies not controlled by rules and regulations, it is believed that this good accomplished has been very great; and it is in my opinion quite necessary that the work of conserving the water supplies along these two lines be continued and if possible extended during the coming year.

EDUCATION

It has already been noted that the advance of modern sanitation depends in very great measure upon the efficiency and extent of our educational agencies. The men of to-morrow are the children of to-day. It is to them we must look for the knowledge and earnestness required for the continued progress of this work. Realizing fully the vast importance of this educational work, the Department has made every effort to extend and increase its value. An idea of what has been done may be gained by a glance at the following four subdivisions.

(a) Public Schools:

One of the most important steps forward in sanitary education, the greatest very possibly, ever taken in this State is the announcement of the Department of Education that hereafter regular and systematic instruction in sanitary science and public health will be given to the first eight grades in all our public schools.

The beginning of this teaching will mark an epoch in the history of sanitation and the resulting benefits will be of inestimable value to the State.

all health officers will have to produce some evidence of training in health matters.

The Department desires to see a course in sanitation in every college in the State and its services if needed are at the disposal of any or all.

(c) Schools for Health Officers and Experts:

For several years the Department has held sanitary institutes for the instruction of its medical experts and health officers. At the present time these special educational activities have been somewhat increased and during the year there will be fifteen short courses of about a week's duration with lectures, demonstrations and practical laboratory work for health officers.

The several branch laboratories of the Department will also give instruction to students. There will also be held several meetings for conference and instruction of the medical experts of the Department.

In addition by the kindness of Dr. A. H. Doty, health officer of the Port of New York, the great opportunities afforded by the Quarantine Station at Staten Island are made available to health officers in the State. There instruction will be given in sanitary matters, particularly inspection, diagnosis, disinfection and quarantine.

(d) Literature:

It must suffice to say that during the past year over a million circulars and pamphlets and 150,000 copies of the Bulletin have been distributed.

TUBERCULOSIS

Popular educational work for the prevention of tuberculosis has been continued along the very successful lines detailed in former reports. The plan of co-operation between this Department and the State Charities Aid Association in conducting municipal campaigns for the prevention of tuberculosis has been conducive of a maximum of results.

The itinerary for the Department's large traveling tuberculosis exhibition for the season 1909-1910 is as follows: Syracuse, Corning, Olean, Jamestown, Dunkirk, Niagara Falls, Lockport, Amsterdam and Watervliet. The first six cities had been visited at the time of writing this report and with the single exception

Liberty, Sullivan county, and hearing was held on August 24th. Application was acted on favorably by the State Commissioner of Health, but the local health officer refused permission. Under the provisions of the law, the application was then referred to Hon. Horace White, Lieutenant-Governor of the State, and Hon. James W. Wadsworth, Jr., Speaker of the Assembly. The desired permission was granted by them.

The city of Poughkeepsie was granted permission to establish a hospital in the town of Poughkeepsie and two hearings were held in Rochester on application for permission to establish tuberculosis hospitals by the county of Monroe in the town of Perinton, and the town of Brighton, Monroe county, and both these applications were acted upon favorably.

A hearing was held December 23d on the application of the Laurent Manor Company, for permission to establish a hospital in the town of Mt. Pleasant, Westchester county.

I desire to call attention to the fact that this law limits the State Commissioner of Health to a period of ten days — “not less than thirty days nor more than forty days” — after the petition is received by him, during which the hearing can be held. It would seem that a wider latitude might be given under the law so that in cases where there is no opposition they could be disposed of with less delay and the period of time during which the hearing may be held and decision may be rendered might be somewhat lengthened. As the law stands at present, it is sometimes exceedingly difficult to comply with its provisions, and in cases where there is strenuous opposition every opportunity should be afforded for a full and complete investigation.

For the Future:

It will be seen that the educational work of the Department is resolving itself into definite results. We need more hospital provision for tuberculosis cases and this is rapidly being supplied by provision for county hospitals and other institutions.

This work should be encouraged as much as possible and county hospitals should be constructed on model lines. The educational work should be continued and a strong effort should be made on the part of health authorities in our municipalities to see that

The cases of rabies in man are on the increase throughout this country and consequent measures for the special treatment requisite for the saving of life in such cases have become imperative. The recent investigations of this Department indicate that about 1,000 citizens of this State require this specific treatment of rabies yearly.

Provision has been made by law permitting county officials to secure relief for individuals bitten in their communities by rabid dogs, but the only available methods of cure are exceedingly expensive and so illy adapted to prompt succor as to be quite inadequate to meet such insistent demand.

Investigations and developments in the therapy of rabies have progressed so far in recent years that the Department is now in a position to provide a suitable therapeutic substance for treatment of all cases occurring within the State that may require the Department's aid.

The study and preparation of this subject, outlined in the report of the preceding year, has been completed. The initial steps of practical preparation have been undertaken at the State Hygienic Laboratory, and the Department is ready to begin this year the distribution of matter for the prophylactic treatment of rabies to any practicing physician requiring this material.

This entire work has been undertaken and carried to its present point by the Department, without funds or assistance of any kind.

It has been a matter of such urgency as to require this extra work and effort from our staff. But, the entailed expenses of outfit, package and distribution throughout the State, must be met. The already strained resources of the Laboratory Division, on account of the limited appropriations available, do not permit the undertaking of such expenses, unless further resources may be provided for them.

CANCER LABORATORY

The pleasing developments of the vital statistics of the past year, and their showing of decrease of the general mortality of this State, brings, by contrast, more decidedly into notice and insistent consideration, the fact — long cited in preceding reports — that diseases of cancerous nature are markedly and increasingly refractory to the conquering march of sanitary progress and a consequent demand of diminished mortality.

been difficult to meet the numerous demands made upon it. This condition, of course, while it reflects much credit upon the growing intelligence of our people and an awakened public interest and desire for better sanitation throughout the State, also reflects a responsibility and duty which the State owes its people in return, in keeping pace with this progressive tendency and furnishing the means and facilities by which these demands may be adequately met. This movement toward better sanitary condition can only be encouraged, and this duty can only be fulfilled under our present form of State government in two ways: First, by equipping this important branch of the State Department of Health with the necessary engineering staff and facilities to enable it to furnish assistance and advice when called upon; and, secondly, by furnishing the necessary *additional* equipment and facilities, when, as now seems imperative, the limit of its resources has been reached.

An outline of the more important work of the Engineering Division for 1909 will now be given and, in doing this, I will refer to the various subdivisions of the work under the same headings used in my last annual report.

Protection of Public Water Supplies:

Although the Public Health Law provides for a partial control over the public water supplies of the State through the enactment and enforcement of suitable rules and regulations formulated by the State Commissioner of Health when application is made by the local board or water company having control over these supplies, the Department would manifestly be performing only partially its proper functions in this important field if it limited its operations to the performance of these duties alone. It may be considered almost an axiom that the good health of any community is in a large measure directly proportional to the purity of its public water supply, and, as a corollary, that one of the first and prime duties of a municipal government, and especially of a State department, is to see that these public supplies are secured from pure and unpolluted sources and that these sources are maintained in an unpolluted and safe condition.

It is evident, then, that notwithstanding the lack of full control over these public water supplies provided by the Public Health Law and the difficulties oftentimes met by lack of proper authority, the State Department of Health through its Engineering Division must be called upon to perform many active duties, engage in many

It was essential, and in some cases it was found necessary, to point out clearly the real responsibility attached to the enactment and enforcement of these rules and regulations in order to avoid on the one hand any misunderstanding on the part of the boards and companies making the application, and on the other hand any false feeling of security among the water consumers concerning the safety of the supply furnished by such rules. If, then, in view of this better understanding as to the operation of such rules and regulations, there still remains any hesitancy among those interested in applying for these means for protecting the purity of their water supplies, I can see no adequate remedy under the present Health Law; for, even with more stringent measures and greater power lodged with the State Commissioner of Health, it would be impracticable, in face of public sentiment and lack of facilities in this Department, to patrol and search out all possible sources of danger upon these many watersheds now protected, or for the Department to assume to perform the functions and duties required of the local authorities in the enforcement of these rules.

It is evident, then, that no real advance can be made in this direction without considerable educational work and until the local communities have been made to realize the dangers that underlie their apathy, and have become impressed with the fact that this question is one of self preservation. With this end in view it was found desirable to make a number of special investigations of certain water supplies which are protected by water rules following which full reports were prepared and transmitted to the local authorities containing the results of these investigations and the conclusions and recommendations concerning the measures which should be taken to better protect these supplies and calling attention to the danger points on the watersheds which could and should be removed under the existing rules and regulations of this Department. A list of the municipalities where the water supplies were thus investigated and reported upon during 1909 is as follows:

Amsterdam,
Newburgh,

Canastota,
Port Jervis,

Saugerties.

Attention was called in my report to you of last year to a general order issued in 1908 to some forty-seven municipalities of the State whose water supplies are protected by rules and regulations, calling for a thorough examination of the watersheds furnishi-

supplies taken from watersheds remotely situated and uninhabited and the water from which is free from pollution and generally safe. Many of these supplies, however, are not so favorably situated and are subject to some pollution and are consequently of questionable quality. How best to improve the quality of these supplies in the absence of water rules has always been one of the problems before the Department.

It was considered that as a prerequisite to any material progress toward the improvement of these supplies it would be necessary to make an investigation of the sanitary conditions of the sources from which these supplies are derived. Accordingly, in 1908, a special investigation was undertaken by the Engineering Division of a selected number of 225 surface water supplies in the State not protected by rules and regulations, and having for its object, first the securing of information concerning the physical features of each supply and the sanitary condition of the watershed from which it was derived, and secondly, the preparation of a report based upon the knowledge thus secured setting forth the findings and conclusions concerning the sanitary quality of the water furnished and recommendations concerning any changes or improvements which it would be desirable or necessary to carry out.

The practical results of this manner of investigating and reporting upon many of the supplies of the State which have not received the proper attention which they should have received, were shown by experience to be so satisfactory during 1908 that this work was continued during the year 1909. In my report to you of last year there was presented the list of municipalities the water supplies of which it was possible to investigate and report upon during 1908. During the past year it was possible to investigate and report upon some twenty-five more of the original list of municipalities as follows:

Amsterdam.
Berlin,
Cairo,
Camden,
Canandaigua,
Castile,
Cazenovia,
Deansboro,

Deposit,
Florida,
Haverstraw, W. Haverstraw
and Stony Point,
Margaretville,
Port Jervis,
Sag Harbor,
Saugerties,

Poughkeepsie,	Staatsburg,	Watervliet.
Prattsville,	Suffern,	Waverly,
Rensselaer,	Tarrytown,	Wellsville,
Saratoga Springs,	Tupper Lake,	White Plains.

(c) Investigation of Water Purification Plants:

This special investigation was begun in 1908 and the nature of the work and the results accomplished during that year were fully outlined in my report to you covering that year. A full description of each plant inspected and the results obtained generally by the methods of operation employed were presented in the twenty-ninth annual report of the Department.

The knowledge gained by this investigation in 1908 showed so clearly that many of the so-called filter plants in the State, especially some of those in the smaller villages, were so crude in design and showed such apparently low efficiencies that they could hardly be classified as purification plants. This work is important, however, as forming suitable records of the Department and as a basis for attempting improvements in construction and operation when this contemplated phase of the work in connection with them is taken up; and for this reason the work has been continued during 1909.

A list of the municipalities where the filter plants have been investigated during the past year is as follows:

Ardsley,	Mamaroneck,	Port Chester,
Arctic,	Middletown,	Rensselaerville,
Central Valley,	Mt. Vernon,	Suffern,
Cobleskill,	North Pelham,	Tarrytown,
East Worcester,	North Tarrytown,	Warwick,
Jeffersonville,	Oneonta,	Yonkers.
Larchmont,	Pleasantville,	

Investigation of Outbreaks of Typhoid Fever:

Although it is true that in many places in this State conditions exist which must give rise to an undue prevalence of typhoid fever and other water-borne diseases, it is also fortunately true that outbreaks or epidemics of this disease are not of frequent occurrence. When we consider that these outbreaks are always preventable and therefore unnecessary, and that these epidemics are attended with human and financial loss that approach in some

year will, however, be referred to in the following list which gives the names of the municipalities or townships in which the cases have arisen:

Akin	Cohoes	Middleport
Akron	Copenhagen	Mohawk
Albion	Corning	Mount Morris
Alden	Cortland	Napanoch
Bemus Point	East Meredith	New Kingston
Buffalo	Ellenville	North Bangor
Busti	Fishkill-on-Hudson	Ontario Center
Canaan	Geneva	Oyster Bay
Canisteo	Glen Cove	Phoenix Mills
Castile	Gowanda	Piermont
Chadwicks	Greenfield Center	Port Jefferson
Chappaqua	Jamestown	Rye
Charlton	Jefferson	Sloansville
Chazy	Jeffersonville,	South Lima
Cherry Valley	Johnstown	Stillwater
Childwold	Lackawanna	Thousand Island
Clarkson	Lake Huntington	Park
Clyde	Liberty	Utica
Cobleskill	Lockport	West Albany
Coeymans	Long Lake	York Center
Colonie	Manlius	

Public Nuisances Not Arising from Stream Pollution:

Although by far the larger number of nuisances which occur in the State are caused by the pollution of our streams, there are, however, a great many which have their origin in other conditions and surroundings. Many of these are of minor importance and should not be referred to the Department but should be handled by the local Board of Health, who have ample power under the Public Health Law to abate them. All complaints which are received are promptly acknowledged and properly referred to the local Health Officer for investigation if they are of lesser importance and fall properly within his jurisdiction; or are taken up and investigated by the Engineering Division and action taken upon them by the Department, if they are of such nature, magnitude or importance as to require the action of State authority.

Although a classification of these nuisances is impracticable, the ones which more particularly require the attention of the Engineer-

earlier and more favorable time of the year for the investigation, a better opportunity for a more complete inspection of the operation of these plants and of observing the effects of these operations in creating a nuisance in Richmond county and on the Kill von Kull. The findings and results of this supplementary investigation constitute a full confirmation of the conclusions reached as a result of the former investigation, and a full report covering the same will be transmitted later in my complete report covering the entire work of the Department for 1909.

Special Investigations:

The importance of making special investigations of certain conditions in addition to the routine work and duties of the division, specifically required under the Public Health Law, can not be overestimated when we stop to consider that the results of these investigations represent in a measure a working capital or foundation upon which much of the current work of the division is based, and that being largely of an educational nature, they are helpful in creating a better understanding among the people of the needs of certain sanitary reforms.

The special investigations carried on during the past year have been largely extensions of the same or similar investigations taken up in previous years. Two of these special investigations have been referred to under the protection of public water supplies, and descriptions of the remaining investigations will now be taken up under special headings of sanitary survey of watersheds, sanitary conditions of summer resorts, sanitary conditions of cities and illegal construction of sewers.

(1) Sanitary Survey of Watersheds:

Sanitary surveys of the watersheds of the more important rivers of the State have already been made and the full reports covering them have been published in the annual reports of the Department for the years 1907 and 1908. These surveys included such principal rivers as the Upper Hudson, Mohawk, Black, Raquette, Oswego, Allegheny, Susquehanna and Delaware, the total watershed areas of which cover the larger and more populous section of the State. For this reason and in order to complete other investigations now relatively more important, less attention was given during the past year in extending this investigation. In fact, only one additional watershed, the Oswegatchie river, was investi-

teen of these resorts, and letters were addressed to the proprietors at the close of the season, requesting that improvements be made.

During the summer of 1908 the investigation was resumed along two lines: First, the reinspection of those Long Island and Catskill resorts inspected during the season of 1907, where conditions were found to be insanitary, in order to determine whether these conditions had been corrected; second, the new inspection of resorts in that portion of the Adirondack region included in the Raquette River and Saranac River watersheds. Of the twenty-four summer resorts on Long Island and in Catskill mountains, whose owners had been asked to improve sanitary conditions found to exist in 1907, it was found that in fourteen cases insanitary conditions had been abated; in eight instances they had been partially abated; and in two cases conditions were found to exist as previously stated. In the Adirondacks forty-two resorts were inspected, sixteen being on the Raquette river watershed, and twenty-six on that of the Saranac river, and as a result letters were sent to the proprietors of twenty-four of these resorts requesting that insanitary conditions surrounding the water supply or affecting the general sanitary state of the resort be corrected, and in many instances calling their attention to the prohibition against the discharge of sewage into streams and lakes, specifying under what conditions as to sedimentation or preliminary treatment such discharge would be permitted.

During the past year, in order to systematize the work and to place the investigation on a firm basis, as well as to facilitate the work of inspection, the State has been divided arbitrarily into the following thirteen districts:

- 1 Thousand Islands — St. Lawrence District.
- 2 Fulton Chain — Big Moose District.
- 3 Raquette, Tupper and Long Lake District.
- 4 Saranac — St. Regis District.
- 5 Lake Champlain District.
- 6 Lake George District.
- 7 Lake Pleasant — Saratoga Springs District.
- 8 Western District.
- 9 Central — Finger Lakes District.
- 10 Otsego Lake — Richfield Springs District.
- 11 Catskill — Albany District.
- 12 Southern District.
- 13 Long Island District.

In 1907 and 1908 investigations were made and completed of the following nine cities and villages:

Babylon,	Dunkirk,	Niagara Falls,
Cohoes,	Elmira,	Ogdensburg,
Corning,	Newburgh,	Poughkeepsie.

During 1909 reports were completed for three municipalities inspected in the latter part of 1908 and for six inspected during the past year, as listed below, the first three in the list being those investigated in 1908:

Mt. Vernon,	Auburn,	Hornell,
Port Chester,	Binghamton,	Ithaca,
Port Jervis,	Geneva,	Oswego.

It has been my custom to transmit these reports to the local authorities, and it is worthy of comment that in nearly all cases immediate steps have been taken to carry out the recommendations and advice contained in these reports. It is thus evident that these investigations have been productive of great practical benefit and have amply justified the time and labor spent in their preparation.

(4) Illegal Construction of Sewers:

Violations of the Public Health Law with respect to the discharge of sewage into the waters of the State without a permit, as required by Sections 76 and 77 of Article V, and the failure of some municipalities to properly submit plans for sewerage and sewage disposal, are matters that have given me considerable concern and careful thought during the past year.

The importance of the evils arising from these violations, the difficulty of satisfactorily investigating and securing evidence proving their existence; the somewhat questionable limit of authority of the State Commissioner of Health in certain cases which have arisen and the consequent desirability or expediency of some revision or modification of the Public Health Law in this regard, have all been pointed out and discussed in my previous reports to you for 1907 and 1908. Until the past year it has been the hope that these omissions to comply with the State laws were largely the result of oversight or indifference on the part of municipal authorities and that by properly calling attention to them they would be properly corrected. While this opinion proved to be true in many cases and a prompt compliance with the law

of the public of the State. For these courses an ample and thoroughly trained teaching staff and laboratory facilities are provided by this Department.

In addition thereto, an auxiliary laboratory is established at Ithaca, New York, and in hearty co-operation with the authorities of Cornell University, that laboratory is able to offer demonstrations of the methods of sanitary examinations of potable waters to all health officers or members of boards of health for whom that locality is available and who are interested in seeing personally the methods employed in laboratory investigation of that nature.

This Ithaca laboratory is also an available center for courses of instruction under the direction of this Department and is so used.

The courses offered at Ithaca are utilized by the young students of Cornell University who aim to engage in a career of public health work.

The generous co-operation of the health officer of the port of New York has rendered also available instruction and training in sanitary matters, particularly of inspection, disinfection and quarantine, for which his station is so justly famous.

The utilization of opportunities available at Quarantine Station at Staten Island is open to health officers recommended for such training by the Commissioner of Health.

In addition to the short technical courses mentioned above as available at Albany and Ithaca, and the special training available at the port of New York, the central administration has organized and is offering special courses at the laboratory in Albany, devised and concentrated on the particular purpose of training medical experts for service in the State Department.

For the utilization of such courses, the medical experts already appointed for such service in the State are assembled at stated periods in Albany for the express purpose of utilizing these special courses to the utmost advantage; and the efficiency and standing of such medical expert is rated by the amount of such training and the definite use that he subsequently makes thereof in the service which he renders to this Department, and it is planned that in the future no person shall be considered eligible for medical expert service in this State who shall not have undertaken these special courses as a suitable preparation for the work which he desires to undertake.

year is too insignificant for mention, and a report from this Division that such a deficiency exists in a very important portion of its proper function is humiliating and it is no satisfaction to offer the only possible excuse, that there has been no provision of funds by the State for the undertaking of this work by the Department.

The growing public intelligence of all of the communities in this State is so great that public sentiment will not long permit such lack of control of food products handled in the State, investigations of which by the United States and other State governments are showing to be widely falsified and in far too many cases even dangerous to life.

Group C:

This year witnessed the accomplishment of a long cherished wish of the Department, in securing for the first time under one center, control of all of the Laboratory services of the Department, and in the latter part of 1909 the entire work of the heretofore existing pathological division has been concentrated with the other work of the State Hygienic Laboratory and is there carried out.

The reorganization of Laboratory methods, which this change of work has entailed, has been accomplished easily and without detriment to the daily promptitude and efficiency of this service and by this reorganization it is hoped to gain far greater promptitude and efficiency, and in addition a more exact report and control of infectious diseases occurring within this State.

Whenever a case of infection is diagnosed at the State Hygienic Laboratory, a report thereof is immediately made to the Division of Contagious Diseases, and the necessary measures of warning, assistance and control to prevent a spread of infection are undertaken by the Department; a great advantage on the former method, which was dependent upon the sometimes neglected duty of the health officer to report a contagious disease promptly to this Department.

Perhaps because of the greater efficiency and promptness of this service of diagnosis, though possibly because of the increasing knowledge of the medical profession throughout the State of the value of such services rendered by the laboratory, the amount of specimens received daily is increasing constantly and reference is made to the daily reports to show the enormous increase in amount

Throughout the year 1909, 24,429 packages of diphtheria antitoxin of 1,500 units each, were prepared and distributed throughout this State. A statistical calculation based on the use of this antitoxin throughout all of the years during which it has been supplied by this Department indicates an average of 4,000 units of diphtheria antitoxin used for each person treated therewith for diphtheria. Calculated on this basis 9,160 persons have been treated by diphtheria antitoxin furnished by this laboratory during the year 1909.

The utility of this method of treatment is beyond all dispute, and knowledge of that fact has penetrated even the most remote corners of this state. The imperative necessity of the early use of diphtheria antitoxin is likewise penetrating widely through the State and the realization of this latter necessity is the important factor to reduce the present mortality of diphtheria cases treated by antitoxin.

A striking illustration of this fact is shown by our own statistics previously published, in which the mortality from diphtheria treated by our antitoxin based on a large number of cases and tabulated according to the number of doses following the appearance of disease, in which antitoxin is given, is as follows:

Mortality first day	3.4
Mortality second day	3.6
Mortality third day	13.0
Mortality fourth day	10.5
Mortality fifth day and later 25 per cent., making average mortality of	9.6

To remark that this general mortality is three times the mortality of cases treated on the first or second day, requires no further support of our contention that the reduction of the present general mortality of such cases to a very marked low point, is dependent merely upon the thorough realization of the necessity of using antitoxin immediately upon the first appearance of the disease.

During the last year the demands for antitoxin service increased with leaps and bounds, so that the average of the monthly distribution for the last of the year is more than the total amount of antitoxin issued for diphtheria by this Department in 1902.

jected to by its neighbors and require a relatively heavy cost of up-keep and attention to prevent serious complaint on these matters.

The present situation is illy adapted and the present equipment inadequate for the work which we are actually doing. It is incapable of expansion and improvement at reasonable cost and there is in consequence the necessity of immediate and serious consideration of ways and means to meet the future requirements with adequate service on the part of the Laboratory Division.

During this year every possible effort, with the funds available, has been made to keep the present buildings and yard in proper condition of repair and cleanliness, but everything that is done there does not improve the fundamental lack of proper buildings and proper situation, nor does it provide for the important enlargement that is necessary for Laboratory quarters.

The production and supply of tetanus antitoxin seems to remain quite stationary, as it is based upon the demand in the State, and it is either due to the fact that tetanus is not prevalent, or that the realization of what an antitoxin serum can do for this disease is not sufficiently impressed upon the medical profession.

The resolution of the cause of this stationary point would be easily found by study of statistics and is of interest to determine.

In addition to the increased amount of antitoxins furnished, the service has been improved by the introduction of the syringe package and by an increase in the potency of the serum used, so that a larger number of units per cubic centimeter is handled in these syringes than has heretofore been issued.

During this year the Laboratory has adopted almost exclusively the use of concentrated and purified antitoxins, and the reports on the use of our antitoxins are indicating greater satisfaction of the profession, first, with the syringe form of distribution; second, with the increased potency; and third, the fact that the precipitated and purified product which we supply is markedly superior in avoiding the production of serum rashes and similar complications.

This year is the first during which the prophylactic treatment of ophthalmia neonatorum has been undertaken by this Department, and the preparation and distribution of the outfits for this

vailing communicable diseases in all parts of the State under the Department's jurisdiction.

The Department has also been kept in touch with the local health municipalities, and with the movements of communicable diseases, by the required report of health officers of certain of these diseases monthly, and of others such as smallpox, scarlet fever and diphtheria, immediately on their occurrence, along with specified data regarding the source, care, precautions and the like appropriate for each. A file is kept of these, and record, by means of which the central office of the Department is kept informed of health conditions reflected by these diseases and ready here and there to apply a remedy. By these records, investigations and correspondence, the Department has constantly at hand a memorandum of each municipality as to its transient or persistent affection with these preventable causes of sickness, and a gauge by which to measure and handle each case, and to maintain supervision of that part of the State which is under its supervision.

Smallpox:

At the beginning of the year epidemics of this disease were in existence at Amsterdam and at Middleburgh and surrounding towns in Schoharie county, a large number of cases in both localities. It was not controlled in Amsterdam until a smallpox hospital was established. In the spring there was a considerable outbreak of smallpox in Cortland and Homer; one was discovered at Bridgeport, Sullivan county, which infected other localities; also at Whitestown, near Utica, likewise spreading elsewhere. During the summer there was little prevalence. In the fall one sick with smallpox came to North Tonawanda from Canada, and there resulted an epidemic which still continues and has spread to Tonawanda and adjoining towns, not less than fifty-seven cases having followed this first case in all these places. This now abating outbreak has caused a good deal of effort and outlay to control by the local health officers and the State Department.

Smallpox occurred during the year in twenty-eight counties, the chief places of prevalence being in the places mentioned. There has been a record of 461 cases during the year, all but nine of which were outside of New York city. The number last year was

the decade of the 80s prevailed now there would have been 17,000 deaths this year from pulmonary tuberculosis, instead of 13,948.

While this is not to be taken as a fair estimate of salvage in life, since the increment of population has been doubtless largely from outside and of healthy material, yet some of it may fairly be given to improved conditions. The uniformity of the yearly mortality, the little varying toll paid month by month to this large cause of prolonged invalidism and death, is the notable fact, and the need to combat it is just as urgent as ever. The average yearly reported mortality for twenty-five years is 13,200, and the variations from the average have always been inconsiderable.

The number of cases reported to the Department this year was 32,937, which is a ratio of 2.4 living to one death. This is a very substantial increase in reported cases over last year; it shows better, more complete, reporting of living cases. This is a gain toward control. There are certainly, however, many yet not on record. This securing of returns is one of the distinct accomplishments of the year. It is comparatively new, having been only of recent years undertaken and by laws of 1908 required. Difficulties surround the securing of the report of tuberculosis which do not apply to other communicable diseases. Having it, it is possible to reach each with instructions to sick and well, and sometimes with the means of cure.

Typhoid Fever:

There was no large epidemic of typhoid fever during the year. Of outbreaks there were some and of persistence in localities for years having an excess of typhoid fever there were some. At Cape Vincent on the St. Lawrence river, and taking its water supply therefrom, a rather abrupt outbreak occurred in March; there were sixteen cases in a population of 1,200, with three deaths. At Clayton, further down the river, this disease became excessive in March. The water of this river, which is of immense volume and by laboratory test pure, is unfit to drink raw, as has been repeatedly found true, as the sewage, though greatly diluted, carries much of the time typhoid bacilli under conditions favoring their prolonged vitality.

At East Kingston, Ulster county, fifty cases occurred in a settlement of laborers; a number of workmen in a marble quarry at

One of the difficulties health officers have to contend with in the management of diphtheria, and one liable to escape their attention, is the occurrence of so-called germ cases; those in which, in possibly exceedingly mild cases that are overlooked from lack of clinical symptoms, or where in persons who have been attendants upon the sick but in no way affected themselves, the bacilli of diphtheria exist in the throat; these may continue to exist there for an indefinite length of time, and as long as they do, render the subject infectious. On these antitoxin has no effect, its potency being only in the control of the disease. The prolonged isolation that seems necessary for such individuals is one of the hardships of diphtheria.

Scarlet Fever:

There was a continuance of the prevalence of scarlet fever from 1908, which lasted through the first half of the year; since it has diminished. There were reported some 22,000 cases, of which 15,000 occurred prior to midsummer. The decrease has been altogether in the city of New York, which reports but half the number of cases of 1908. It has continued being distributed over the State at large and indeed more cases occurred outside of the metropolis than in last year. It has been mostly mild, so mild that often it eludes diagnosis. The mortality has fallen to less than 1,200 for the year, which is 500 less than in 1908. The rural mortality is the same as that of last year.

Measles:

This caused a few more deaths than in 1908; it caused more deaths than scarlet fever. There were about 50,000 cases of it reported, those in New York city being less than in 1908. The ratio of deaths was 1 to 40 cases reported, which is one-half the lethality of scarlet fever for the year.

Cerebro-Spinal Meningitis:

Of this 482 cases have been reported, 356 being from New York city. They have been for the most part sporadic. There were 416 deaths. The use of the Flexner serum against it has not become general. The certainty of the diagnosis in all cases

A death was reported from it in the November Bulletin, the subject being a resident of Staten Island, but on further inquiry it has appeared to have been a case of chronic poisoning of another sort. Whether the results of future study will be such as to place it among the epidemic and communicable diseases is possibly yet to be determined.

Ophthalmia Neonatorum:

This has been placed in the list of diseases of which Health Officers are required to make report; forty cases have been reported, no report upon it from New York city being included.

This is the first entire year of work in this direction. It has been taken up for the purpose of saving new-born children from a disease which is almost certain to result in blindness. The disease is not common; it is infrequent enough to occur but few times or possibly not at all in the experience of the average physician. A suitable prophylactic applied to the eyes at birth will prevent its development. Securing its report is only a step towards affecting its control. The chief work upon it this year by the Department has been to induce physicians and mid-wives to habitually and uniformly use preventive measures on the eyes of every new-born child with which they have to do. Pledge cards to do this have during the year been sent to every practising physician in the State outside of New York city, and to every mid-wife whose name could be secured. Return postal cards to this end have been sent to 6,353 physicians and to 157 mid-wives; 3,702 of the former and 56 of the latter have thus far signed this pledge. This work has received general commendation from the medical profession in whatever comment is made in connection with the return of the pledge cards.

There has also been placed on the certificates of birth a question as to whether ophthalmia prophylaxis has been used in the eyes of the child whose birth is reported. The purpose of this is to keep constantly before the obstetrician this measure. Physicians will not misinterpret this as an official demand or as an interference with individual judgment as to treatment, when they reflect upon the importance of the uniform and routine use of a procedure which will prevent a grave disease. During the year a prophy-

Annual Sanitary Conference:

The Ninth Annual Conference of Sanitary Officers of the State of New York was held at Rochester on November 10th, 11th and 12th, and was an unqualified success. There was a very large registration of health officers, who listened with marked attention and much profit to the able addresses given by the distinguished speakers whose names appear on the following program:

WEDNESDAY, NOVEMBER 10, 2:30 P. M.

Meeting called to order by George W. Goler, M.D., Health Officer, City of Rochester.

Address of Welcome by Mayor H. H. Edgerton.

Reply by Eugene H. Porter, M.D., State Commissioner of Health.

New Methods in Diagnosis and Treatment of Infectious Diseases. William S. Magill, M.D., Director State Hygienic Laboratory, Albany.

Public Health Work in Ohio. Charles O. Probst, M.D., Secretary Ohio State Board of Health.

Influence of Trades on Disease. Frederick L. Hoffman, Statistician, Prudential Life Insurance Company, Newark, N. J.

8:00 P. M.

Public Health Problems. Eugene H. Porter, M.D.

The People's Interest in Public Health. Rush Rhees, LL.D., President University of Rochester.

Shall We Continue or Shall We Abate the Sewage Pollution of Streams? Prof. W. T. Sedgwick, Massachusetts Institute of Technology.

THURSDAY, NOVEMBER 11, 10 A. M.

A School for Sanitarians. Jacob G. Schurman, LL.D., President Cornell University.

The Public Health Law. Mr. Alec H. Seymour, Secretary, State Department of Health.

The Registration of Tuberculosis. Marshall L. Price, M.D., Secretary, Maryland State Board of Health.

The Cornell Sanitary Laboratory. Prof. H. N. Ogden, C.E., Special Assistant Engineer, State Department of Health.

2:00 P. M.

Prophylaxis of Communicable Diseases. William A. Howe, M.D., Medical Expert, State Department of Health.

The Work of a City Health Department. D. M. Totman, M.D., Health Officer, Syracuse.

The Organization of a City Health Department. George W. Goler, M. D. Health Officer, Rochester.

The Work of a Health Officer. Montgomery E. Leary, M.D., Health Officer, Town Gates.

County Sanitary Organizations. O. J. Hallenbeck, Health Officer, Canandaigua.

with 1907, the net decrease in the registration districts in the State being 19,104, or 20.7 per cent.

Complete returns of marriages occurring in the State during 1909 are still lacking at the Department, but reports received from the county clerks indicate that there were about 80,000, as compared with 92,421 in 1907 and 73,317 in 1908.

Pulmonary tuberculosis causes 13,996 deaths. In 1908 there were 14,347, and the year before 14,431. While there was a decrease in the death rate from tuberculosis from 167.5 in 1908 to 160.3 in 1909, the percentage of all deaths due to tuberculosis remains nearly stationary — 10.0.

During the last twenty-five years during which the population of the State has increased from 5,600,000 to 8,600,000, there have been 330,000 deaths from pulmonary tuberculosis — a yearly average of 13,200.

The urban mortality from tuberculosis during 1909 was 175 per 100,000 population, and the rural 120.

There were 2,112 deaths from tuberculosis other than pulmonary, viz.: Laryngeal, 127; meningeal, 1,113; abdominal, 390; Potts disease, 92; tuberculous abscess, 27; general tuberculosis, 165; other tubercular diseases, 207, making a total of 16,117 deaths from tuberculosis, or 11.5 per cent. of the total deaths occurring in this State.

Pneumonia caused 9,423 deaths, 796 more than in 1908. Influenza was given as the cause of 1,122 deaths. From other diseases of the respiratory organs there were 11,406 deaths.

Cancer caused 7,060 deaths, which is an increase of 406 over the reported mortality for 1908. The urban death rate was 78 per 100,000 population, and the rural 86. In 1908 it was 74 and 79, and in 1907 it was 76 and 77, respectively. The average yearly deaths from cancer during the past 25 years is 4,227, the reported mortality having increased from 1,887 in 1885 to 7,034 in 1909, and the death rate has increased from 33.6 to 80.0 per 100,000 population.

Bright's disease caused 9,393 deaths — 6,743 urban and 2,650 rural — an increase of 871 over 1908.

Violence was the cause of 9,232 deaths — 6,794 urban and 2,438 rural. The rate of deaths per 100,000 population in the

two social classes was nearly identical — 107 and 104. The total number was about the same as in 1908 (9,183).

There were 1,494 deaths by suicide, which is 12 less than in 1908, and 279 more than occurred in 1907. The chief modes of death were from firearms, 412; poisoning, 341, and asphyxia, 308. There were 62 suicides from drowning and 201 by hanging.

The mortality from typhoid fever was 1,315, which is 60 less than in 1908. The death rate from typhoid fever is the lowest ever recorded in the State, being 15.0 per 100,000 population.

There were 7,873 deaths from diarrhea and enteritis under two years of age — 1,238 less than in 1908, and 1,940 less than in 1907. Of these deaths, 85 per cent. were urban.

The childhood mortality was a little under that of 1908, the saving being in the first year of life, and mostly in the urban population. Compared with 1907 the decrease is more marked, about 2,000 fewer deaths occurring under one year of age — principally in the urban mortality. The mortality between one and five years of age shows no material change.

Diphtheria continues to be an urban disease, the mortality in Greater New York being 38 per 100,000 population, and the continued rate in all of the cities was little less (32), while in rural parts of the State there were but 10 deaths per 100,000 population. The total mortality from diphtheria was 2,313, which is slightly under that of 1908.

There were 1,205 deaths from scarlet fever, and 1,272 from measles.

Cerebro-spinal meningitis caused 485 deaths.

The total mortality from epidemic diseases was 9,049, or 6.5 per cent. of the deaths from all causes. Including pneumonia and tuberculosis, there were 32,468 deaths from zymotic diseases, or 23.0 per cent. of all deaths.

Old age mortality is increased by 1,573 as compared with that of 1908 — 43,298 deaths, a little more than one-third of the total, having occurred at and over the age of sixty.

Respectfully submitted,

EUGENE H. PORTER,

State Commissioner of Health

February 15, 1910

- October 21. Cost of Defective Public Health. Professor J. W. Jenks.
 October 26. Governmental Control Over Preventable Diseases. Professor Jenks.
 October 28. Standards of Living and Public Health. Professor Jenks.
 November 2. Personal Hygiene and Public Health. Professor Jenks.
 November 4. Prolongation of Human Life. Professor W. F. Willcox.
 November 9. The Classification of Causes of Death. Professor Willcox.
 November 11. Disease and Its Problems for Philanthropy. Professor F. A. Fetter.
 November 16. Health and Its Promotion by Philanthropy. Professor Fetter.
 November 18. The Birth Rate. Professor Willcox.
 November 23. Marriage and Divorce. Professor Willcox.
 November 30. The Nature of Disease. Dean V. A. Moore.
 December 2. Micro-Organisms and Their Relation to Disease. Dean Moore.
 December 7. Diseases of Animals Transmissible to Man. Dean Moore.
 December 9. The Influence of Mind Upon Private and Public Health. Professor E. B. Tichener.
 December 14. Problems of Life and Health in Industry. Frederick L. Hoffman.
 December 16. Insanity and Public Health. Dr. W. L. Russell.
 December 21. Diphtheria Antitoxin and Its Preparation. Dr. Wm. S. Magill.

Addresses and Lectures:

In furtherance of its educational policy, the Commissioner and members of the Department have from time to time during the past year addressed public meetings and gatherings of medical men. Some of these addresses have been on various aspects of public health work, some have been devoted to a discussion of local sanitary problems, and a large number have been given in connection with the campaign against tuberculosis which is being waged throughout the State under the joint auspices of this Department and the New York State Charities Aid Association.

DIVISION OF VITAL STATISTICS

The total reported mortality for 1909 was 140,261, which based upon an estimated population of 8,699,643, shows the death rate to have been 16.1 per 1,000 population, as compared with 16.3 for 1908. There was but very little difference in the urban and rural death rate.

There were 202,656 births reported, which is 503 less than the number reported for 1908, and the birth rate dropped from 23.8 to 23.3 in 1909. The decrease in births was due no doubt to the large decrease in marriages occurring in 1908 as com-

APPENDIX

FINANCIAL STATEMENT

Eleanore C. Gibb, junior clerk.....	\$570 00
Estelle Jarvis, junior clerk.....	570 00

\$9,960 00

Division of Communicable Diseases

*John T. Wheeler, M.D., director.....	\$258 06
Wm. A. Howe, M.D., director.....	294 33
Cora Partridge, clerk.....	900 00
Alice M. Fuller, stenographer.....	850 61

\$2,303 00

TEMPORARY EMPLOYEES

Minnie S. Warner, clerk.....	\$85 32
Cecelia Martin, stenographer.....	166 66
Ruth Van Noy, stenographer.....	50 00
Helen McQuide, telephone operator.....	64 00

\$365 98

ANTITOXIN LABORATORY

Herbert D. Pease, M.D., director.....	\$3,208 26
Mott C. Cunningham, bacteriologist.....	600 00
Wm. S. Magill, M.D., bacteriologist.....	330 64
I. H. Lindsay, clerk.....	1,200 00
Grace McCullom, stenographer.....	600 00
Mrs. J. Cruickshank, cleaner.....	480 00
Mrs. Fannie Mainster, cleaner.....	465 00
Mrs. Charles Schadler, cleaner.....	198 00
Margaret Hill, cleaner.....	360 00
Jennie A. Marsh, cleaner.....	392 00
Charles Schadler, stableman.....	600 00
Walter Reynolds, assistant stableman.....	480 00

\$8,913 90

FINANCIAL STATEMENT

59

<i>Disbursements</i>				1908-09
Oct.,	1908.	Sundries	\$411 60	
		Salaries	803 16	
				\$1,214 76
Nov.,	1908.	Sundries	\$944 84	
		Salaries	835 16	
				1,780 00
Dec.,	1908.	Sundries	\$260 51	
		Salaries	843 16	
				1,103 67
Jan.,	1909.	Sundries	\$573 94	
		Salaries	848 16	
				1,422 10
Feb.,	1909.	Sundries	\$700 76	
		Salaries	698 16	
				1,398 92
Mar.,	1909.	Sundries	\$1,166 15	
		Salaries	698 16	
				1,864 31
April,	1909.	Sundries	\$585 74	
		Salaries	698 16	
				1,283 90
May,	1909.	Sundries	\$705 42	
		Salaries	698 16	
				1,403 58
June,	1909.	Sundries	\$354 36	
		Salaries	698 16	
				1,052 52
July,	1909.	Sundries	\$837 20	
		Salaries	698 16	
				1,535 36
Aug.,	1909.	Sundries	\$496 20	
		Salaries	903 80	
				1,400 00
Sept.,	1909.	Sundries	\$2,050 78	
		Salaries	491 50	
				2,542 28
				<u>\$18,001 40</u>

HYGIENIC LABORATORY

Leonard M. Wachter, chemist.....	\$2,100 00
A. J. Slack, assistant chemist.....	990 00
W. G. Fellows, assistant bacteriologist.....	940 00
Blanche C. Vose, cleaner.....	480 00
T. G. Conklin, laborer.....	560 00
H. C. Kniffen, laborer.....	120 00

\$5,190 00

Disbursements

Oct., 1908.	Sundries	\$67 45	
	Salaries	410 00	
			\$477 45
Nov., 1908.	Sundries	\$138 73	
	Salaries	410 00	
			548 73
Dec., 1908.	Sundries	\$48 98	
	Salaries	470 00	
			518 98
Jan., 1909.	Sundries	\$34 86	
	Salaries	470 00	
			504 86
Feb., 1909.	Sundries	\$460 34	
	Salaries	435 00	
			895 34
Mar., 1909.	Sundries	\$79 49	
	Salaries	435 00	
			514 49
April, 1909.	Sundries	\$94 46	
	Salaries	435 00	
			529 46
May, 1909.	Sundries	\$1,361 59	
	Salaries	435 00	
			1,796 59
June, 1909.	Sundries	\$30 40	
	Salaries	435 00	
			465 40

FINANCIAL STATEMENT

61

July, 1909.	Sundries	\$726 83	
	Salaries	435 00	
			\$1,161 83
Aug., 1909.	Sundries	\$55 23	
	Salaries	455 00	
			510 23
Sept., 1909.	Sundries	\$1,711 61	
	Salaries	365 00	
			2,076 61
			<u>\$9,999 97</u>

CANCER LABORATORY

H. R. Gaylord, M.D., director.....	\$3,208 26
G. H. A. Clowes, chemist.....	2,291 63
Gary N. Calkins, biologist.....	300 00
F. W. Baeslack, assistant biologist.....	800 00
C. A. Maclay, secretary.....	825 00
D. Averill, assistant in photo-chemistry.....	842 00
F. A. Payne, janitor.....	360 00
Edward Kempkes, laborer.....	100 00
M. Weber, laborer.....	58 00
Jesse McCarney, laborer.....	307 00
Jas. Duff, laborer.....	87 50
Chas. M. Stuart, laborer.....	52 50
Guy Owen, laborer.....	390 00
Arthur Johnson, laborer.....	150 00
Fred West, laborer.....	450 00
Ed. Sears, laborer.....	646 00
	<u>\$10,867 89</u>

Disbursements

Oct., 1908.	Sundries	\$777 77	
	Salaries	1,053 49	
			\$1,831 26
Nov., 1908.	Sundries	\$669 61	
	Salaries	1,099 49	
			1,769 10

STATE DEPARTMENT OF HEALTH

Dec.,	1908.	Sundries	\$882 78	
		Salaries	1,076 99	
				\$1,959 77
Jan.,	1909.	Sundries	\$584 32	
		Salaries	956 99	
				1,541 31
Feb.,	1909.	Sundries	\$545 17	
		Salaries	956 99	
				1,502 16
Mar.,	1909.	Sundries	\$545 90	
		Salaries	956 99	
				1,502 89
April,	1909.	Sundries	\$455 23	
		Salaries	969 99	
				1,425 22
May,	1909.	Sundries	\$559 38	
		Salaries	972 99	
				1,532 37
June,	1909.	Sundries	\$847 69	
		Salaries	581 33	
				1,429 02
July,	1909.	Sundries	\$492 21	
		Salaries	872 99	
				1,365 20
Aug.,	1909.	Sundries	\$447 42	
		Salaries	872 99	
				1,320 41
				\$17,178 71

INVESTIGATIONS

Monthly Expenditures

October, 1908	\$787 10
November, 1908	520 87
December, 1908	1,031 80
January, 1909	717 42
February, 1909	362 95
March, 1909	276 93

FINANCIAL STATEMENT

68

April, 1909	\$400 64
May, 1909	135 85
June, 1909	252 68
July, 1909	1,254 01
August, 1909	1,090 70
September, 1909	1,111 11

\$7,942 06

Disbursements

Annual conference of sanitary officers	\$1,129 40
Investigation of public water supplies, stream pollution, etc.	1,580 47
Investigation of sanitary condition of summer resorts	1,085 29
Investigation of shellfish grounds	539 12
Investigation of sight and hearing of school children	516 06
Investigation of public milk supplies	309 50
Investigation of proposed sites for tuberculosis hospitals	297 85
Investigation of smoke nuisance on Staten Island	183 49
Miscellaneous investigations — public nuisances, etc.	2,300 88

\$7,942 06

OFFICE EXPENSES

Monthly Expenditures

October, 1908	\$1,702 36
November, 1908	614 59
December, 1908	918 92
January, 1909	541 52
February, 1909	599 18
March, 1909	719 49
April, 1909	1,445 18
May, 1909	845 13
June, 1909	728 45

July, 1909	\$474 73
August, 1909	580 80
September, 1909	313 26
	<hr/>
	\$9,483 61
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Disbursements

Printing — publication of monthly bulletin, blanks for registration of vital statistics, etc.	\$6,019 66
Filing cases and office supplies.	1,966 63
Books and subscriptions.	271 89
Telephone service	744 38
Telegraph service	481 05
	<hr/>
	\$9,483 61
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Division of Engineering — instruments, books, fur- niture and office supplies.	\$1,000 48
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Printing marriage record blanks, registers and in- dex books to carry out the provisions of chapter 742 of the Laws of 1907.	\$2,300 98
	<hr/> <hr/>
Postage	\$2,900 00
Expressage, freight, etc.	2,080 43
	<hr/>
	\$4,980 43
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SUPPRESSION OF EPIDEMICS OF SMALLPOX AND OTHER CON-
TAGIOUS AND INFECTIOUS DISEASES

Monthly Expenditures

October, 1908	\$125 30
November, 1908	602 00
December, 1908	734 08
January, 1909	1,163 06
February, 1909	458 37
March, 1909	388 57

FINANCIAL STATEMENT

65

April, 1909	\$1,220 38
May, 1909	965 79
June, 1909	813 94
July, 1909	561 29
August, 1909	295 15
September, 1909	324 11
	<hr/>
	\$7,652 04
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Disbursements

Printing and supplies	\$1,773 36
Services and expenses of medical experts, as follows:	
Dr. F. C. Curtis	1,992 94
Dr. Hills Cole	900 00
Dr. Wallace Clark	157 21
Dr. C. W. Crispell	479 30
Dr. Charles W. Bibbins	136 40
Dr. Frederick J. Mann	56 50
Dr. W. H. Connelly	44 35
Dr. Edward Clark	72 87
Dr. E. H. Hutton	23 50
Dr. B. W. Sherwood	11 40
Dr. O. W. Peck	13 32
Dr. A. G. Wilding	84 70
Dr. John B. Huber	1,032 88
Dr. Z. F. Dunning	23 00
Dr. Jno. W. Le Seur	60 00
Dr. W. B. Gibson	14 87
Dr. E. S. Willard	39 94
Dr. H. A. Eastman	14 00
Dr. Frank W. Adriance	25 00
Dr. Arthur W. Booth	25 00
C. W. Fetherolf	500 00
Paul Bernhardt	160 00
Geo. A. Deel	11 50
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	\$7,652 04
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OPHTHALMIA NEONATORUM

Furnishing local health officers with ophthalmia
neonatorum outfits.....

\$785 44

TRAVELING EXPENSES

Disbursements

October, 1908	\$687 20
November, 1908	536 51
December, 1908	739 02
January, 1909	327 12
February, 1909	373 93
March, 1909	317 11
April, 1909	634 44
May, 1909	486 80
June, 1909	546 38
July, 1909	386 10
August, 1909	214 40
September, 1909	574 36

\$5,823 37
Expended for Following Purposes

Miscellaneous investigations — public nuisances, etc.	\$1,388 56
Investigating public water supplies, sewage dis- posal, etc.	1,222 67
Investigating shellfish grounds	353 34
Investigating public milk supplies.....	302 41
Investigating sanitary conditions of cities.....	176 95
Expenses of lecturers and members of advisory board in tuberculosis campaign; meetings of county medical societies; sanitary school at Cor- nell College, etc.....	2,190 84
Expenses in connection with annual conference of sanitary officers, and Department's exhibition at State Fair	188 60

\$5,823 37

Traveling expenses of Commissioner..... \$1,457 30

TUBERCULOSIS EXHIBITION

Monthly Expenditures

October, 1908	\$1,132 35
November, 1908	1,525 81
December, 1908	979 52
January, 1909	349 68
March, 1909.....	12 10
April, 1909	2 00
May, 1909	1 40
June, 1909	1,733 73
July, 1909	636 39
August, 1909	343 00
September, 1909	347 85
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	\$7,063 83
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Disbursements

For labor, material, repairs and necessary supplies for tuberculosis exhibition.....	\$1,681 29
Salaries of director, lecturers and laborers.....	2,325 00
Traveling expenses of director, lecturers, etc., with exhibition in New York State and at Interna- tional Cong. Tub. at Washington.....	1,762 19
Rent of rooms for exhibition.....	285 00
Transportation of exhibition in New York State and at Int. Cong. Tub. at Washington.....	597 09
Printing, etc.	361 01
Telephone service	52 25
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	\$7,063 83
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TOTAL EXPENDITURES FOR THE YEAR

Division of Administration.....Salaries.....	\$12,960 00
Division of Engineering.....Salaries.....	10,723 33
Division of Vital Statistics.....Salaries.....	9,960 00
Division of Communicable Diseases.Salaries.....	2,303 00
Temporary employees	365 98
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	\$36,312 31
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DIVISION OF VITAL STATISTICS

ALBANY, N. Y., *April* 15, 1910.

Hon. EUGENE H. PORTER, *State Commissioner of Health,
Albany, N. Y.:*

SIR:—I have the honor to herewith transmit the following report covering the work in the Division of Vital Statistics for the year 1909.

It is gratifying to note that the efforts of the Department to bring about a more complete registration of births and deaths in the State is meeting with success.

Important amendments were made to the registration laws at the last session of the Legislature, requiring the filing of birth certificates within thirty-six hours after a birth occurs, and the reporting of deaths within twenty-four hours after death occurs.

Through the earnest efforts of the Department to see that local boards of health adopt and enforce local ordinances requiring compliance with the provisions of section 22 of the Public Health Law, a decided improvement in the registration throughout the State has been noticeable.

The amendments above noted have resulted in a more prompt and complete filing of certificates of births and deaths.

During the year a new standard form of birth and death certificates was prescribed and furnished local boards of health for the proper recording of births and deaths occurring in the State.

The new death certificate is the same form as that approved by the United States Census Bureau and American Public Health Association. The adoption of a uniform certificate will greatly facilitate the study and comparison of mortality statistics.

In addition to supplying the local boards of health with the necessary blanks for the proper registration of births and deaths, the Department has furnished the county clerks with the blank forms required to carry out the provisions of the marriage license law. Reports received from the town and city clerks, who issue the marriage licenses, confirm the statement made last year — that the law has grown in favor and proven beneficial to society.

The total reported mortality was 140,261, which based upon an estimated population of 8,699,643, shows the death rate to have

been 16.1 per 1,000 population, as compared with 16.3 for 1908. There was but very little difference in the urban and rural death rate.

There were 202,656 births reported, which is 503 less than the number reported for 1908, and the birth rate dropped from 23.8 to 23.3 in 1909. The decrease in births was due no doubt to the large decrease in marriages occurring in 1908 as compared with 1907, the net decrease in the registration districts in the State being 19,104, or 20.7 per cent., as it is well known that there is a steady improvement in the registration of births occurring in the State.

Total Registration in State Since 1885

The following table shows the total registration of births, deaths and marriages occurring in the State since 1885.

YEAR	Population	*Births	Deaths	Marriages	Birth rate	Death rate	Marriage rate
1885.....	5,609,910	63,536	80,407	24,409	11.3	14.3	4.4
1886.....	5,719,855	89,828	86,801	36,764	15.7	15.2	6.4
1887.....	5,831,947	102,038	108,269	44,438	17.5	18.6	7.6
1888.....	5,946,246	103,089	114,584	43,683	17.3	19.3	7.3
1889.....	6,062,764	114,804	113,155	50,960	18.8	18.6	8.4
1890.....	6,182,600	112,572	128,648	41,195	18.2	20.8	6.7
1891.....	6,316,333	125,909	129,850	51,458	19.9	20.5	8.1
1892.....	6,438,283	130,143	131,388	52,725	20.2	20.3	8.1
1893.....	6,537,716	136,297	129,659	52,805	20.8	19.7	8.1
1894.....	6,638,696	141,827	123,423	52,539	21.4	18.6	7.9
1895.....	6,741,246	142,311	128,834	59,059	21.1	19.1	8.7
1896.....	6,845,375	147,327	126,253	58,990	21.5	18.4	8.6
1897.....	6,951,111	144,631	118,525	57,530	20.8	17.1	8.3
1898.....	7,058,459	138,702	122,584	57,392	19.7	17.4	8.1
1899.....	7,167,491	136,778	121,831	61,167	19.1	17.0	8.5
1900.....	7,281,533	143,156	132,089	63,225	19.7	18.1	8.7
1901.....	7,434,896	140,539	131,335	65,216	18.9	17.7	8.8
1902.....	7,591,491	146,740	124,830	68,903	19.3	16.4	9.1
1903.....	7,751,375	158,343	127,498	73,011	20.4	16.4	9.4
1904.....	7,914,636	165,014	142,217	74,677	20.8	18.0	9.4
1905.....	8,081,333	172,259	137,435	78,261	21.3	17.0	9.7
1906.....	8,251,538	183,012	141,099	87,870	22.2	17.1	10.7
1907.....	8,425,333	196,020	147,130	92,421	23.3	17.5	11.0
1908.....	8,546,356	203,159	138,912	72,286	23.8	16.3	8.4
1909.....	8,699,643	202,656	140,261	80,233	23.3	16.1	9.2

* Still births excluded.

Registration of Births

While there is a steady improvement in the registration of births, many local boards of health are slack in enforcing strict compliance with the provisions of section 22 of the Public Health Law, and the Department is constantly receiving delayed returns.

Beginning with the present year the returns from each registration district have been checked up each month, and where it is found that the law is not being enforced, notice is served on the

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local board of health to correct existing defects, and thus far there has been a noticeable improvement in the prompt reporting of births.

The effectiveness of the requirements to report births within thirty-six hours after the birth occurs, has been plainly shown in the city of Rochester, where the local health authorities are enforcing the law. During the first quarter of the present year there were 25 per cent. more births reported in the city than during the corresponding period the previous year.

The cities of Niagara Falls, Watertown, Rome, Middletown, Cortland, Plattsburg and Johnstown show a like increase, while other cities show a most satisfactory increase in the registration of births.

The increase in the rural districts is not so perceptible, owing to some extent, no doubt, to the small birth rate as compared with the cities.

The following table shows the number of births which were reported as having occurred in 1909, classified by the month for which the report was received.

Month	Number of Births
January	2,147
February	1,894
March	2,012
April	2,234
May	2,456
June	2,678
July	2,890
August	2,765
September	2,543
October	2,321
November	2,109
December	1,987
Total	25,135

The 2,747 colored births were classified as follows: Negro, 2,694; Indian, 29; Mongolian, 24. Of the 202,656 living births, 2,660 were premature.

Marriages

The following table shows the number of marriages reported in the State during 1907 — year preceding the enactment of the Marriage License Law — and those reported since the enactment of the new law.

During the year the Department was obliged to return 3,386 defective certificates for correction. This is 500 less than were returned the year previous, and as the Department requires more complete information as to cause of death than heretofore, this decrease in the number of defective certificates shows that the Department is receiving more satisfactory returns of deaths.

There is a steady increase from year to year in the demand for certified copies of certificates of births, marriages and deaths filed with the Department to be used for legal purposes. The number of requests received during the year were 1,046.

City Registration

The following table shows the registration of births, marriages and deaths in the cities of the State; the birth and death rate for 1909, and the average rates for the previous five years:

	Estimated population, 1909	Births	Deaths	Mar- riages	RATE PER 1,000 POPULATION			
					1909		AVERAGE FOR PAST FIVE YEARS	
					Birth	Death	Birth	Death
Albany.....	100,730	1,238	1,759	784	12.3	17.5	11.9	18.3
Amsterdam.....	25,267	756	423	355	29.9	16.7	20.8	16.8
Auburn.....	34,272	615	499	325	17.9	14.6	19.4	17.6
Binghamton.....	45,855	933	712	491	20.3	15.5	17.3	16.2
Buffalo.....	396,535	9,027	6,111	3,542	22.8	15.4	22.0	15.7
Cohoes.....	24,185	503	488	195	20.8	20.2	17.9	19.7
Corning.....	15,339	253	217	137	16.5	14.1	17.9	16.7
Cortland.....	12,538	220	162	96	17.5	12.9	16.3	13.6
Dunkirk.....	18,061	535	202	164	29.6	11.2	34.1	15.5
Elmira.....	35,765	537	546	422	15.0	15.3	15.8	15.5
Fulton.....	11,759	219	167	101	18.6	14.2	19.7	14.8
Geneva.....	13,543	254	175	108	18.8	12.9	18.8	14.6
Gloversville.....	18,761	388	300	214	20.7	16.0	16.8	15.2
Glens Falls.....	16,279	242	226	116	14.9	13.9	14.9	15.2
Hornell.....	14,126	291	185	113	20.6	13.1	18.8	14.9
Hudson.....	11,032	198	172	71	17.9	15.6	17.1	19.1
Ithaca.....	15,584	289	211	127	18.5	13.5	14.9	15.7
Jamestown.....	28,495	575	343	480	20.1	12.0	20.5	11.9
Johnstown.....	9,473	156	155	94	16.5	16.4	17.2	13.5
Kingston.....	26,110	502	519	170	19.2	19.9	21.8	18.3
Lackawanna.....	11,370	171	150	19	15.0	13.2	.....	.....
Little Falls.....	11,563	323	183	186	22.8	15.8	18.9	13.4
Lockport.....	18,105	373	276	155	20.6	15.2	18.1	15.1
Middletown.....	16,610	279	256	131	16.8	15.4	15.1	16.8
Mount Vernon.....	27,891	798	392	220	28.7	14.1	26.3	15.2
Newburgh.....	27,418	456	471	220	16.6	17.2	19.3	19.2
New Rochelle.....	24,920	727	323	198	29.2	13.0	26.1	14.1
New York (Greater).....	4,450,963	122,367	74,105	46,407	27.5	16.6	27.2	18.4
Manhattan.....	2,305,196	62,990	37,961	*31,596	27.3	16.5	29.1	18.0
Bronx.....	328,460	9,574	6,426	.....	29.1	19.6	26.9	20.7
Brooklyn.....	1,505,925	41,494	24,365	12,714	27.6	16.2	25.6	17.4
Queens.....	233,709	6,317	3,838	1,647	27.0	16.4	25.3	16.6
Richmond.....	77,673	1,922	1,515	450	25.6	19.5	25.5	20.0
Niagara Falls.....	32,012	664	465	356	20.7	14.5	19.9	16.1
North Tonawanda.....	10,987	330	162	114	30.0	14.7	25.6	13.9
Ogdensburg.....	14,921	355	245	139	23.8	16.4	22.0	19.1
Olean.....	18,000	307	211	153	17.1	11.7	21.5	13.5
Oneida.....	10,099	138	139	72	13.7	13.8	18.4	14.8
Oneonta.....	8,794	157	152	85	17.5	17.3	.....	.....

* Includes marriages for Borough of Bronx.

Albany County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Albany, city.....	98,374	1,238	1,254	1,759	1,842	784	739
Altamont, village.....	669	8	2	12	8	.....	.....
Berne, town.....	1,915	25	17	27	33	6	13
Bethlehem, town.....	4,451	44	54	69	48	27	24
Coeymans, town.....	4,264	127	97	53	59	27	30
Cohoes, city.....	24,183	511	464	489	432	195	207
Colonie, town.....	7,845	74	99	121	128	49	49
Green Island, town.....	.....	.....	.....	.....	.....	.....	.....
Green Island, village.....	*4,878	68	62	64	85	30	20
Guilderland, town.....	2,871	23	38	36	53	10	17
Knox, town.....	1,174	17	11	24	17	10	10
New Scotland, town.....	2,536	29	37	31	35	12	14
Rensselaerville, town.....	1,682	25	17	27	37	7	4
Voorheesville, village.....	479	3	7	6	12	.....	.....
Watervliet, city.....	14,600	196	184	230	252	130	69
Westerlo, town.....	1,558	22	13	22	21	7	8
Total.....	171,497	2,410	2,356	2,970	3,062	†1,299	1,204

NOTE.—In giving the population of towns including incorporated villages, the town is credited with the inhabitants residing outside of the village limits, as that territory constitutes a separate registration district from the village.

* Town and village have same boundaries.

† Includes 5 delayed returns.

Allegany County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Alfred, town.....	872	18	15	16	11	11	13
Alfred, village.....	912	9	13	8	6	.....	.....
Allen, town.....	631	15	17	6	6	4	2
Alma, town.....	1,064	15	23	6	18	4	6
Almond, town.....	1,429	18	18	13	16	9	7
Amity, town.....	1,130	22	16	20	15	15	8
Andover, town.....	882	20	17	10	10	23	15
Andover, village.....	1,097	13	19	25	15	.....	.....
Angelica, town.....	575	10	16	19	17	13	9
Angelica, village.....	1,101	25	17	22	18	.....	.....
Belfast, town.....	1,640	25	17	24	13	10	15
Belfast, village.....	.....	.....	13	.....	14	.....	.....
Belmont, village.....	1,207	20	19	17	14	.....	.....
Birdsall, town.....	653	8	7	8	5	3	4
Bolivar, town.....	938	25	26	5	5	37	19
Bolivar, village.....	1,368	26	29	17	15	.....	.....
Burns, town.....	731	17	12	13	13	12	9
Canaseraga, village.....	730	9	7	7	11	.....	.....
Caneadea, town.....	1,387	26	20	20	25	8	10
Centreville, town.....	1,029	11	20	11	6	3	5
Clarksville, town.....	838	18	18	10	9	8	8
Cuba, town.....	821	12	19	13	12	24	16
Cuba, village.....	1,519	25	36	28	40	.....	.....
Friendship, town.....	978	17	18	17	18	14	18
Friendship, village.....	1,259	13	16	19	18	.....	.....
Genesee, town.....	1,146	15	10	11	9	11	14
Granger, town.....	761	9	9	3	10	3	9
Grove, town.....	766	11	15	16	8	5	7
Hume, town.....	1,817	26	26	30	20	13	17
Independence, town.....	1,222	24	24	14	13	18	11
New Hudson, town.....	879	14	12	9	11	7	5
Richburg, village.....	375	7	9	5	1	.....	.....
Rushford, town.....	1,432	28	24	18	17	10	6
Scio, town.....	1,354	26	21	22	18	8	12
Ward, town.....	521	9	6	7	8	4	2
Wellsville, town.....	1,366	27	29	18	12	43	55
Wellsville, village.....	4,355	62	75	74	64	.....	.....
West Almond, town.....	548	7	9	6	11	2	3
Willing, town.....	1,120	21	13	17	5	1	6
Wirt, town.....	788	13	14	6	9	7	6
Total.....	43,257	716	744	610	566	330	317

Cattaraugus County — Continued

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Leon, town.....	845	9	19	4	7	3	8
Limestone, village.....	721	16	19	10	5	.....	.....
Little Valley, town.....	497	12	8	8	4	21	15
Little Valley, village.....	1,225	24	24	17	16	.....	.....
Lyndon, town.....	647	11	9	10	10	5	9
Machias, town.....	1,494	32	28	45	27	1	.....
Mansfield, town.....	940	19	19	7	17	2	2
Napoli, town.....	791	14	14	9	12	4	3
New Albion, town.....	863	18	18	9	12	21	20
North Olean, village.....	1,761	.....	62	.....	32	.....	.....
Olean, town.....	3,380	9	78	14	47	21	64
Olean, city.....	10,163	331	246	211	139	153	129
Otto, town.....	927	11	19	13	14	6	8
Perrysburg, town.....	1,049	9	16	16	14	7	7
Persia, town.....	1,858	5	5	3	4	14	10
Portville, town.....	1,624	31	29	18	15	26	13
Portville, village.....	774	10	6	8	7	.....	.....
Randolph, town.....	539	18	14	11	7	13	18
Randolph, village.....	1,163	19	21	12	19	.....	.....
Red House, town.....	564	25	12	8	11	6	4
Salamanca, town.....	415	4	3	2	3	73	65
Salamanca, village.....	5,455	141	151	72	66	.....	.....
South Valley, town.....	562	16	17	7	5	1	4
West Salamanca, village...	558	5	6	3	9	.....	.....
Yorkshire, town.....	1,730	20	22	31	27	7	8
Total.....	66,196	1,294	1,267	875	892	*583	587

* Includes 7 delayed returns.

Cayuga County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Auburn, city.....	31,422	615	600	499	483	325	277
Aurelius, town.....	1,148	9	16	14	24	6	19
Aurora, village.....	.....	5	10	3	6	.....	.....
Brutus, town.....	993	15	21	5	15	19	21
Cato, town.....	1,160	15	19	14	16	13	11
Cato, village.....	357	2	4	4	5	.....	.....
Cayuga, village.....	400	6	4	9	8	.....	.....
Conquest, town.....	1,187	13	13	15	16	10	5
Fair Haven, village.....	660	14	3	10	11	.....	.....
Fleming, town.....	1,006	27	17	21	15	2	4
Genoa, town.....	1,866	15	23	23	35	0	0
Ira, town.....	1,230	23	17	19	25	7	7
Ledyard, town.....	1,996	25	11	19	13	7	12
Locke, town.....	914	6	12	16	16	9	7
Mentz, town.....	869	14	7	11	15	19	18
Meridian, village.....	314	5	2	7	1	.....	.....
Montezuma, town.....	914	13	16	18	17	4	7
Moravia, town.....	1,234	2	7	15	12	19	17
Moravia, village.....	1,489	2	9	24	27	.....	.....
Niles, town.....	1,159	12	22	21	13	9	9
Owasco, town.....	1,302	18	13	31	23	9	2
Port Byron, village.....	1,016	15	11	23	18	.....	.....
Scipio, town.....	1,512	18	17	21	21	5	8
Sempronius, town.....	594	8	19	11	15	8	6
Sennett, town.....	1,859	19	22	31	36	2	3
Springport, town.....	446	13	11	18	7	6	5
Sterling, town.....	1,844	20	43	29	36	19	18
Summer Hill, town.....	669	10	13	10	8	9	5
Throop, town.....	984	8	6	9	8	5	8
Union Springs, village.....	890	10	10	18	12	.....	.....
Venice, town.....	1,309	5	12	22	16	4	5
Victory, town.....	1,316	22	16	26	19	7	11
Weedsport, village.....	1,495	19	17	22	24	.....	.....
Total.....	65,309	1,023	1,043	1,038	1,016	523	485

Chautauqua County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Arkwright, town.....	863	12	10	7	5	6	5
Brocton, village.....	1,056	27	25	16	11	.....	.....
Busti, town.....	1,534	26	38	20	16	11	14
Carroll, town.....	1,638	38	31	33	16	18	14
Celoron, village.....	700	17	20	5	7	.....	.....
Charlotte, town.....	684	21	15	6	10	9	6
Chautauqua, town.....	3,505	38	30	64	60	61	61
Chautauqua Lake Associa- tion, village.....	*	9	3	6	5	.....	.....
Cherry creek, town.....	807	13	17	12	9	16	3
Cherry creek, village.....	634	8	6	10	9	.....	.....
Clymer, town.....	1,180	22	22	10	18	10	10
Dunkirk, town.....	438	15	20	13	17	.....	2
Dunkirk, city.....	15,255	524	615	191	224	164	147
Ellery, town.....	1,638	37	29	31	23	11	8
Ellicott, town.....	1,561	24	32	23	18	30	18
Ellington, town.....	1,264	22	25	10	18	3	6
Falconer, village.....	1,643	39	22	18	20	.....	.....
Forestville, village.....	680	16	9	10	8	.....	.....
Fredonia, village.....	5,148	115	150	84	93	.....	.....
French Creek, town.....	951	11	9	15	9	3	7
Gerry, town.....	1,146	27	19	14	20	1	.....
Hanover, town.....	2,396	54	27	25	35	54	49
Harmony, town.....	2,407	36	49	34	42	17	18
Jamestown, city.....	26,160	594	617	343	313	480	381
Kiantone, town.....	524	13	13	8	4	.....	2
Lakewood, village.....	572	6	8	10	8	.....	.....
Mayville, village.....	1,021	23	21	23	10	.....	1
Mina, town.....	1,012	20	8	11	15	5	8
Panama, village.....	375	7	4	4	6	.....	.....
Poland, town.....	1,497	22	20	23	26	5	5
Pomfret, town.....	2,180	50	49	34	23	64	58
Portland, town.....	1,998	28	33	22	27	12	19
Ripley, town.....	2,257	29	43	36	25	57	42
Sheridan, town.....	1,861	19	14	28	24	3	10
Sherman, town.....	709	25	22	16	13	13	7
Sherman, village.....	797	12	13	17	12	.....	.....
Silver Creek, village.....	2,073	46	45	31	27	.....	.....
Sinclairville, village.....	507	2	5	9	13	.....	.....
Stockton, town.....	1,821	33	21	28	19	18	11
Villenova, town.....	1,054	33	22	21	19	8	12
Westfield, town.....	1,531	25	20	15	16	75	57
Westfield, village.....	2,823	69	61	55	46	.....	.....
Total.....	96,880	2,207	2,262	1,391	1,339	1,154	980

* Population included in that of the town of Chautauqua.

Chemung County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908*	1909	1908
Ashland, town.....	359	8	5	3	3	10	13
Baldwin, town.....	506	8	11	11	14	2	.....
Big Flats, town.....	1,571	26	35	31	23	13	9
Catlin, town.....	912	15	8	19	20	9	8
Chemung, town.....	1,328	23	24	19	22	10	15
Elmira, town.....	1,377	16	11	24	16	4	5
Elmira, city.....	34,678	537	609	545	544	422	336
Elmira Heights, village.....	*1,969	51	39	28	30	.....	.....
Erin, town.....	898	24	21	13	14	5	3
Horseheads.....	3,016	21	24	50	40	45	45
Horseheads, village.....	1,810	42	33	30	26	.....	.....
Southport, town.....	2,073	27	16	23	22	18	19
Van Etten, town.....	666	9	20	15	18	9	6
Van Etten, village.....	420	7	6	8	13	.....	.....
Veteran, town.....	1,475	25	24	19	25	8	8
Wellsburg, village.....	481	5	13	8	2	.....	.....
Total.....	51,600	844	899	846	832	555	467

* Part of village in town of Horseheads.

Chenango County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Afton, town.....	1,144	4	10	24	25	12	18
Afton, village.....	707	13	8	14	17	.....	.....
Bainbridge, town.....	855	10	23	12	18	15	15
Bainbridge, village.....	1,113	12	8	13	22	.....	.....
Columbus, town.....	863	15	14	13	9	5	4
Coventry, town.....	889	2	12	14	11	6	10
German, town.....	430	12	6	6	8	5	2
Greene, town.....	1,806	23	26	29	26	12	17
Greene, village.....	1,358	20	20	31	23	.....	.....
Guilford, town.....	2,261	27	35	28	37	13	8
Lincklaen, town.....	607	10	8	9	12	7	5
McDonough, town.....	816	14	23	16	13	6	4
New Berlin, town.....	1,297	21	15	18	21	20	11
New Berlin, village.....	1,128	16	17	24	21	.....	.....
North Norwich, town.....	742	8	12	11	14	2	3
Norwich, town.....	1,332	23	25	24	11	76	66
Norwich, village.....	7,115	138	143	138	115	.....	.....
Otselic, town.....	1,111	16	17	14	20	12	5
Oxford, town.....	1,393	17	23	59	46	22	17
Oxford, village.....	1,865	17	33	24	32	.....	.....
Pharsalia, town.....	690	10	8	8	6	3	2
Pitcher, town.....	740	9	9	16	10	4	6
Plymouth, town.....	995	11	14	15	12	10	4
Preston, town.....	626	7	7	16	16	1	1
Sherburne, town.....	1,768	19	29	19	32	7	17
Sherburne, village.....	927	10	12	23	12	.....	.....
Smithville, town.....	994	12	12	12	13	4	5
Smyrna, town.....	922	24	12	18	19	9	6
Smyrna, village.....	271	4	2	2	2	.....	.....
Total.....	36,783	530	583	650	623	251	226

Clinton County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Altona, town.....	2,500	45	68	33	25	15	22
Ausable, town.....	2,399	13	14	14	16	10	11
Beekmantown, town.....	1,889	18	16	32	44	21	14
Black Brook, town.....	2,129	17	12	21	14	16	14
Champlain, town.....	1,767	74	53	33	24	46	45
Champlain, village.....	1,400	44	17	11	10	.....	.....
Chazy, town.....	2,835	116	*109	37	47	24	15
Clinton, town.....	1,590	49	40	24	13	12	19
Dannemora, town.....	2,084	42	18	10	9	16	13
Dannemora, village.....	633	17	9	12	20	.....	.....
Ellenburgh, town.....	3,201	45	50	11	8	31	11
Mooers, town.....	2,825	72	71	60	52	17	20
Mooers, village.....	537	5	17	8	10	.....	.....
Peru, town.....	2,354	39	34	30	40	11	11
Plattsburgh, town.....	2,475	40	36	31	25	19	18
Plattsburgh, city.....	10,184	222	212	202	132	151	110
Rouse's Point, village.....	1,674	11	18	12	4	.....	.....
Saranac, town.....	3,156	84	104	38	47	16	17
Schuyler's Falls, town.....	1,642	29	41	25	32	14	9
Total.....	47,282	982	939	644	572	†420	349

* 19 delayed returns.

† Includes one delayed return.

Columbia County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Ancram, town.....	1,212	22	15	17	17	9	1
Austerlitz.....	926	11	18	16	12	5	6
Canaan, town.....	1,266	11	5	17	28	11	17
Chatham, town.....	1,403	39	26	42	43	29	29
Chatham, village.....	2,090	30	20	35	35	.....	.....
Claverack, town.....	2,488	25	37	33	37	32	21
Clermont, town.....	768	15	15	11	10	8	2
Copake, town.....	1,346	18	15	20	24	7	9
Gallatin, town.....	751	11	12	13	10	5	2
Germantown, town.....	1,634	25	29	19	19	13	14
Ghent, town.....	2,581	15	25	43	58	10	11
Greenport, town.....	1,151	24	18	14	22	6	8
Hillsdale, town.....	1,423	13	6	12	21	7	20
Hudson, city.....	10,290	197	187	172	166	71	57
Kinderhook, town.....	1,131	15	11	17	13	21	20
Kinderhook, village.....	856	15	14	20	15	.....	.....
Livingston, town.....	1,605	24	15	18	19	13	8
New Lebanon, town.....	1,498	15	18	18	18	9	10
Philmont, village.....	1,971	34	27	35	34	.....	.....
Stockport, town.....	2,569	41	39	33	25	14	14
Stuyvesant, town.....	1,908	32	29	30	29	17	3
Taghkanic, town.....	760	18	10	11	12	1	2
Valatie, village.....	1,231	22	22	20	23	.....	.....
Total.....	42,868	672	613	666	690	288	254

Cortland County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Cincinnatus, town.....	1,033	18	27	20	13	8	5
Cortland, city.....	11,272	230	201	163	179	96	84
Cortlandville, town.....	2,167	24	21	39	50	20	17
Cuyler, town.....	945	11	9	6	16	6	12
Freetown, town.....	539	14	15	7	11	3	3
Harford, town.....	679	9	12	7	14	1	3
Homer, town.....	1,487	17	26	12	22	33	25
Homer, village.....	2,536	38	27	47	42	.....	.....
Lapeer, town.....	442	5	4	7	4	3	1
McGrawville, village.....	879	12	10	19	17	.....	.....
Marathon, town.....	516	10	8	5	10	13	8
Marathon, village.....	1,042	12	16	11	18	.....	.....
Preble, town.....	841	9	15	10	11	5	10
Scott, town.....	708	18	15	13	13	4	3
Solon, town.....	540	14	17	8	9	3	2
Taylor, town.....	759	20	12	10	6	5	7
Truxton, town.....	1,186	11	17	4	21	5	3
Virgil, town.....	1,239	16	11	17	16	8	8
Willet, town.....	685	10	11	9	11	1	.....
Total.....	29,503	498	474	414	483	214	191

Delaware County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Andes, town.....	1,529	22	16	24	24	17	11
Andes, village.....	340	6	6	7	7	.....	.....
Bovina, town.....	916	19	11	11	13	4	9
Colchester, town.....	3,070	68	62	38	40	23	31
Davenport, town.....	1,560	30	25	29	16	10	10
Delhi, town.....	1,127	15	20	15	23	19	31
Delhi, village.....	1,781	20	29	37	26	.....	.....
Deposit, town.....	1,895	15	17	11	14	11	7
Franklin, town.....	1,951	35	38	18	35	23	12
Franklin, village.....	493	3	5	6	10	.....	.....
Hamden, town.....	1,386	22	23	21	21	11	6
Hancock, town.....	4,320	63	†66	49	28	56	56
Hancock, village.....	1,381	37	35	15	14	.....	.....
Harpersfield, town.....	1,244	16	12	4	8	10	7
Hobart, village.....	503	12	6	10	10	.....	.....
Kortright, town.....	1,527	31	27	24	12	10	11
Margaretville, village.....	583	9	17	13	18	.....	.....
Masonville, town.....	1,120	22	14	19	11	11	6
Meredith, town.....	1,469	23	29	17	19	13	9
Middletown, town.....	3,236	64	67	48	33	26	27
Roxbury, town.....	2,206	28	21	39	37	16	16
Sidney, town.....	1,787	28	23	27	35	36	31
Sidney, village.....	2,532	38	34	41	32	.....	.....
Stamford, town.....	1,997	15	16	10	9	20	20
Stamford, village.....	*973	22	19	23	28	.....	.....
Tompkins, town.....	2,277	43	39	26	40	8	17
Walton, town.....	2,085	44	35	26	22	47	34
Walton, village.....	2,911	52	33	46	49	.....	.....
Total.....	46,788	802	745	654	634	‡375	351

* Part of village in Schoharie county. † 12 delayed returns. ‡ Includes 4 delayed returns.

Dutchess County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Amenia, town.....	2,152	41	25	40	24	8	10
Beekman, town.....	933	10	8	13	12	6	4
Clinton, town.....	1,275	11	18	9	13	8	6
Dover, town.....	1,992	56	61	27	23	15	14
East Fishkill, town.....	2,088	49	41	31	31	.....	.....
Fishkill, town.....	3,081	48	67	39	37	95	74
Fishkill, village.....	579	9	8	12	9	.....	.....
Fishkill Landing, village.....	3,939	93	86	62	64	.....	.....
Hyde Park, town.....	2,944	37	46	40	40	11	1
La Grange.....	1,271	20	36	21	18	3	4
Matteawan, village.....	5,584	115	105	98	111	.....	.....
Milan, town.....	926	15	9	11	9	2	5
Millbrook, village.....	1,121	31	27	10	6	.....	.....
Millerton, village.....	775	9	11	9	21	.....	.....
North East, town.....	1,288	26	30	18	17	31	31
Pawling, town.....	1,107	16	16	21	19	11	6
Pawling, village.....	733	15	13	12	13	.....	.....
Pine Plains, town.....	1,315	33	26	16	22	5	7
Pleasant Valley, town.....	997	19	16	14	20	4	9
Pleasant Valley, village.....	429	14	3	7	13	.....	.....
Poughkeepsie, town.....	5,380	52	68	63	65	26	23
Poughkeepsie, city.....	25,379	542	595	503	483	212	220
Red Hook, town.....	1,261	28	15	30	24	24	22
Red Hook, village.....	1,572	21	13	15	17	.....	.....
Rhinebeck, town.....	2,063	40	19	28	30	11	19
Rhinebeck, village.....	1,547	24	33	24	24	.....	.....
Stanford, town.....	1,641	32	21	19	25	7	7
Tivoli, village.....	1,041	13	19	14	24	.....	.....
Union Vale, town.....	976	17	10	16	18	7	5
Wappinger, town.....	752	21	23	13	22	28	29
Wappingers Falls, village.....	3,588	92	*79	67	58	.....	.....
Washington, town.....	1,892	39	33	49	57	15	29
Total.....	81,633	1,588	1,580	1,351	1,369	†542	525

* 18 delayed returns. † Includes 13 delayed returns.

Essex County — Continued

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Schroon, town.....	1,213	12	16	15	32	7	11
Ticonderoga, town.....	2,942	75	73	56	50	35	35
Ticonderoga, village.....	1,749	35	45	19	14	.....	.....
Westport, town.....	1,763	34	40	24	34	.....	14
Willsboro, town.....	1,629	29	27	19	19	7	5
Wilmington, town.....	574	21	11	9	8	4	3
Total.....	32,452	645	697	544	524	255	216

Franklin County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Altamont, town.....	2,074	45	27	28	19	35	33
Bangor, town.....	2,184	53	38	20	38	18	15
Belmont, town.....	2,403	68	35	25	21	16	12
Bombay, town.....	1,386	35	27	60	15	9	8
Brandon, town.....	920	26	20	16	18	7	7
Brighton, town.....	794	16	15	17	17	4	1
Burke, town.....	1,875	39	43	23	28	14	9
Chateaugay, town.....	1,587	40	26	17	17	19	17
Chateaugay, village.....	1,064	50	16	23	19	.....	.....
Constable, town.....	1,355	31	30	30	24	8	13
Dickinson, town.....	1,762	45	51	28	24	12	12
Duane, town.....	372	10	10	1	3	.....	5
Fort Covington, town.....	1,226	29	44	22	16	19	8
Fort Covington, village.....	854	26	21	20	17	.....	.....
Franklin, town.....	1,496	24	14	23	15	9	8
Harrietstown, town.....	*4,113	9	8	11	10	52	25
Malone, town.....	4,248	89	66	69	50	103	84
Malone, village.....	6,478	122	134	101	104	.....	.....
Moir, town.....	2,477	49	56	37	36	14	12
Santa Clara, town.....	1,053	9	19	4	5	3	3
Saranac Lake, village.....	†3,834	94	†99	143	140	.....	.....
Tupper Lake, village.....	2,769	65	47	50	54	.....	.....
Waverly, town.....	2,160	61	73	35	30	21	15
Westville, town.....	1,149	20	20	22	14	8	12
Total.....	47,012	1,055	939	825	734	371	299

* Includes population of village of Saranac Lake in Franklin county.

† Part of village in Essex county.

‡ Including nonresident deaths.

Fulton County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Bleecker, town.....	527	10	6	8	6	3	2
Broadalbin, town.....	1,933	32	30	25	27	11	12
Caroga, town.....	449	8	12	9	6	2	.....
Ephratah, town.....	1,479	33	35	28	27	6	12
Gloversville, city.....	18,672	388	344	300	341	214	164
Johnstown, town.....	2,493	34	28	55	36	14	6
Johnstown, city.....	9,845	161	172	150	123	94	76
Mayfield, town.....	1,526	21	28	26	21	15	9
Mayfield, village.....	603	9	5	11	7	.....	.....
Northampton, town.....	1,131	15	17	15	21	6	11
Northville, village.....	1,073	19	23	19	17	.....	.....
Oppenheim, town.....	1,258	9	13	15	9	7	8
Perth, town.....	676	5	8	4	7	4	3
Stratford, town.....	652	18	15	6	6	6	6
Total.....	42,330	762	736	671	654	382	309

Genesee County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Alabama, town.....	1,644	37	29	26	15	18	8
Alexander, town.....	1,210	19	15	13	13	12	15
Alexander, village.....	207	3	2	7	3	.....	.....
Batavia, town.....	2,301	16	23	20	17	105	118
Batavia, village.....	10,080	227	187	179	182	.....	.....
Bergen, town.....	1,013	16	20	11	18	10	17
Bergen, village.....	601	14	11	6	8	.....	.....
Bethany, town.....	1,259	18	17	29	24	13	7
Byron, town.....	1,505	28	26	18	15	3	10
Corfu, village.....	481	10	5	17	5	.....	.....
Darien, town.....	1,850	26	32	31	23	16	17
Elba, town.....	1,140	13	15	15	18	10	9
Elba, village.....	404	4	1	6	4	.....	.....
Le Roy, town.....	1,712	45	34	18	23	47	35
Le Roy, village.....	3,395	93	78	59	46	.....	.....
Oakfield, town.....	929	17	25	8	12	15	9
Oakfield, village.....	873	29	29	17	19	.....	.....
Pavillion, town.....	1,546	30	12	27	20	5	11
Pembroke, town.....	1,968	29	27	23	20	12	11
Stafford, town.....	1,319	18	12	9	14	5	11
Total.....	35,878	692	600	539	499	271	272

Greene County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Ashland, town.....	647	11	13	9	12	5	4
Athens, town.....	801	9	5	6	15	18	21
Athens, village.....	2,015	29	18	31	32	.....	.....
Cairo, town.....	1,960	33	33	71	47	14	15
Catskill, town.....	3,569	63	66	75	50	68	59
Catskill, village.....	5,294	85	105	71	81	.....	.....
Coxsackie, town.....	1,377	30	31	19	28	33	13
Coxsackie, village.....	2,940	60	72	45	46	.....	.....
Durham, town.....	1,616	16	20	28	31	14	8
Greenville, town.....	1,626	23	23	29	31	13	18
Halcott, town.....	363	6	3	7	6	1	.....
Hunter, town.....	1,418	38	49	21	25	17	20
Hunter, village.....	524	12	6	9	7	.....	.....
Jewett, town.....	1,044	9	7	7	11	8	7
Lexington, town.....	1,067	20	18	16	13	6	6
New Baltimore, town.....	2,087	27	28	31	30	15	15
Prattsville, town.....	761	17	13	10	14	8	6
Tannersville, village.....	589	18	16	10	15	.....	.....
Windham, town.....	1,427	23	33	25	28	11	12
Total.....	31,130	527	559	520	522	*247	204

* Includes 16 delayed returns.

Hamilton County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Arietta, town.....	295	3	3	1	3	.....	.....
Benson, town.....	215	3	2	3	5	.....	.....
Hope, town.....	317	2	2	4	4	1	1
Indian Lake, town.....	1,049	23	31	7	8	14	12
Inlet, town.....	168	1	2	2	4	.....	.....
Lake Pleasant, town.....	494	.....	3	4	3	1	4
Long Lake, town.....	1,233	21	8	9	5	7	8
Morehouse, town.....	216	4	1	2	1	.....	.....
Wells, town.....	925	12	3	9	10	9	9
Total.....	4,912	69	55	41	43	34	34

Herkimer County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Cold Brook, village.....	318	4	2	5	4	.....	.....
Columbia, town.....	1,180	6	13	17	13	6	4
Danube, town.....	934	19	21	9	11	5	8
Dolgeville, village.....	*2,245	50	50	24	24	.....	.....
Fairfield, town.....	753	16	13	10	12	7	7
Frankfort, town.....	1,747	7	13	32	29	34	19
Frankfort, village.....	2,870	120	111	44	57	.....	.....
German Flats, town.....	1,521	17	16	24	25	83	60
Herkimer, town.....	1,227	21	13	41	30	87	80
Herkimer, village.....	6,596	162	175	115	111	.....	.....
Ilion, village.....	5,924	120	78	67	58	.....	.....
Litchfield, town.....	881	10	11	5	20	1	2
Little Falls, town.....	685	9	4	4	3	3	2
Little Falls, city.....	11,122	323	229	185	138	186	124
Manheim, town.....	†2,887	7	5	6	1	28	25
Middleville, village.....	597	16	8	7	4	.....	.....
Mohawk, village.....	2,044	43	27	35	32	.....	.....
Newport, town.....	1,018	6	16	2	7	11	7
Newport, village.....	672	2	2	11	16	.....	.....
Norway, town.....	682	9	11	6	7	3	3
Ohio, town.....	704	7	10	12	7	6	2
Old Forge, village.....	500	12	14	10	6	.....	.....
Poland, village.....	366	1	1	7	8	.....	.....
Russia, town.....	1,372	20	24	13	28	5	9
Salisbury, town.....	1,373	26	21	25	15	14	10
Schuyler, town.....	1,192	17	11	20	20	5	4
Stark, town.....	999	14	18	5	14	6	4
Warren, town.....	1,152	18	17	18	21	4	3
Webb, town.....	1,255	20	23	5	16	6	9
West Winfield, village.....	749	3	11	9	9	.....	.....
Wilmurt, town.....	309	2	9	1	6	2	1
Winfield, town.....	711	22	14	6	10	8	8
Total.....	53,856	1,129	991	780	762	510	391

* Part of village in Fulton county.

† Including population of village of Dolgeville in Herkimer county.

Jefferson County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Adams, town.....	1,728	27	32	23	19	21	16
Adams, village.....	1,449	16	19	14	21	.....	.....
Alexandria, town.....	2,407	46	46	31	32	34	41
Alexandria Bay, village.....	1,854	48	32	29	29	.....	.....
Antwerp, town.....	1,918	41	32	25	26	26	17
Antwerp, village.....	1,014	16	21	14	14	.....	.....
Belleville, village.....	346	7	3	4	4	.....	.....
Black River, village.....	969	20	22	18	13	.....	.....
Brownville, town.....	1,426	15	15	20	19	16	19
Brownville, village.....	865	20	6	5	10	.....	.....
Cape Vincent, town.....	1,566	28	17	19	17	19	14
Cape Vincent, village.....	1,231	25	17	23	11	.....	.....
Carthage, village.....	3,404	35	67	39	54	.....	.....
Champion, town.....	1,291	13	2	14	20	10	19
Chaumont, village.....	691	8	3	17	4	.....	.....
Clayton, town.....	2,177	37	43	25	38	35	33
Clayton, village.....	1,918	44	42	33	21	.....	.....
Dexter, village.....	1,031	28	18	14	15	.....	.....
Ellisburg, town.....	2,734	39	52	54	33	24	24
Ellisburg, village.....	310	4	5	6	3	.....	.....
Glen Park, village.....	582	18	10	4	3	.....	.....
Henderson, town.....	1,173	18	26	18	18	5	6
Henderson, village.....	344	4	7	.....	10	.....	.....
Hounsfield, town.....	1,443	22	24	18	19	31	18
Le Ray, town.....	2,654	31	29	32	37	10	12
Lorraine, town.....	949	17	22	8	9	9	4
Lyme, town.....	1,407	31	10	12	9	14	9
Mannsville, village.....	350	4	1	12	10	.....	.....
Orleans, town.....	2,433	45	52	32	28	16	15
Parnella, town.....	898	8	15	27	30	7	3
Philadelphia, town.....	843	18	11	10	8	12	10
Philadelphia, village.....	856	17	16	11	18	.....	.....
Rodman, town.....	1,144	34	25	17	17	8	8
Rutland, town.....	914	9	10	17	17	11	13
Sacketts Harbor, village.....	903	20	11	13	10	.....	.....
Theresa, town.....	1,130	25	32	6	17	12	17
Theresa, village.....	892	8	11	22	11	.....	.....
Watertown, town.....	1,128	14	9	18	13	3	3
Watertown, city.....	25,447	519	551	425	406	239	206
West Carthage, village.....	1,377	11	16	17	30	.....	.....
Wilna, town.....	2,462	42	31	30	31	63	59
Worth, town.....	728	8	13	5	6	3	5
Total.....	80,459	1,440	1,426	1,181	1,160	628	571

Lewis County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Constableville, village.....	447	8	6	3	11	.....	.....
Copenhagen, village.....	642	9	3	15	17	.....	.....
Croghan, town.....	2,983	42	45	20	17	19	12
Croghan, village.....	.....	23	8	6	7	.....	.....
Denmark, town.....	1,467	17	13	16	21	8	8
Diana, town.....	1,555	23	15	24	14	22	11
Grelg, town.....	911	16	25	15	24	7	5
Harrisburg, town.....	731	10	8	5	15	5	.....
Harrisville, village.....	780	20	27	9	15	.....	.....
Highmarket, town.....	589	8	11	8	5	1	1
Lewis, town.....	861	15	17	11	10	7	1
Leyden, town.....	925	21	24	23	10	9	7
Lowville, town.....	1,402	20	16	25	31	29	29
Lowville, village.....	2,519	28	33	45	61	.....	.....

Lewis County — Continued

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Lyonsdale, town.....	1,082	19	24	11	17	8	8
Lyons Falls, village.....	709	29	22	12	12	.....	.....
Martinsburgh, town.....	1,749	28	35	23	27	17	13
Montague, town.....	616	9	8	8	4	4	9
New Bremen, town.....	1,764	28	25	18	14	12	6
Osceola, town.....	513	8	7	4	.....	2	.....
Pinckney, town.....	846	13	10	11	8	8	9
Port Leyden, village.....	717	10	12	13	8	.....	.....
Turin, town.....	745	7	15	11	8	6	5
Turin, village.....	389	2	2	7	7	.....	.....
Watson, town.....	890	9	6	13	15	13	7
West Turin, town.....	807	16	13	15	13	16	17
Total.....	26,643	438	430	371	391	*194	151

* Includes 1 delayed return.

Livingston County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Avon, town.....	1,356	17	11	16	15	17	29
Avon, village.....	1,782	41	57	28	32	.....	.....
Caledonia, town.....	1,009	13	17	8	7	13	13
Caledonia, village.....	1,221	27	18	21	15	.....	.....
Conesus, town.....	1,069	12	16	18	13	3	5
Dansville, village.....	3,908	62	57	46	64	.....	.....
Geneseo, town.....	1,093	18	20	20	20	27	24
Geneseo, village.....	2,245	34	35	30	31	.....	.....
Groveland, town.....	1,462	32	23	10	13	9	6
Leicester, town.....	1,414	32	36	18	25	12	1
Lima, town.....	1,290	13	21	12	16	6	11
Lima, village.....	972	12	20	14	10	.....	.....
Livonia, town.....	1,962	38	54	26	36	14	17
Livonia, village.....	782	7	15	11	7	.....	.....
Moscow, village.....	.....	6	.....	3	.....	.....	.....
Mount Morris, town.....	1,337	29	32	19	9	43	46
Mount Morris, village.....	2,611	44	36	50	30	.....	.....
North Dansville, town.....	374	6	8	14	1	47	28
Nunda, town.....	1,274	29	31	23	24	12	9
Nunda, village.....	1,000	14	18	19	17	.....	.....
Ossian, town.....	802	15	10	7	9	2	2
Portage, town.....	1,002	18	18	17	16	8	6
Sparta, town.....	1,015	10	10	6	13	7	5
Springwater, town.....	1,861	42	16	21	26	.....	4
West Sparta, town.....	807	21	9	5	5	3	5
York, town.....	2,790	7	51	31	44	19	14
Total.....	36,450	599	639	493	498	242	225

Montgomery County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES ¹	
		1909	1908	1909	1908	1909	1908
.....	1,850	33	25	32	23	24	21
.....	23,943	749	470	426	414	355	359
.....	1,758	18	23	30	33	27	29
.....	2,224	29	29	30	28	.....	.....
.....	932	9	14	9	16	4	8
.....	2,012	27	14	23	17	9	7
.....	1,131	33	30	22	24	.....	.....
.....	2,596	48	29	38	37	.....	.....
.....	912	17	6	12	16	.....	.....
.....	1,279	6	4	19	12	14	18
.....	815	15	18	4	7	.....	.....
.....	1,995	26	12	25	32	33	37
.....	1,476	19	21	21	19	21	13
.....	709	7	6	5	15	.....	.....
.....	1,384	22	23	33	40	25	15
Village	318	2	6	5	6	.....	.....
.....	1,607	18	16	19	19	13	3
.....	801	9	10	11	11	35	22
.....	2,172	64	46	34	51	.....	.....
Total.....	49,928	1,157	801	798	819	560	532

Nassau County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
East Rockaway, village	877	7	7	6	1	.....	.....
Farmingdale, village.....	1,234	28	11	10	14	.....	.....
Floral Park, village.....	.....	11	1	5	1	.....	.....
Freeport, village.....	4,012	64	40	76	45	.....	.....
Hempstead, town.....	21,564	568	526	338	362	272	221
Hempstead, village.....	4,145	83	80	69	55	.....	.....
Lawrence, village.....	1,500	10	3	9	4	.....	.....
Mineola, village.....	.....	64	33	98	98	.....	.....
North Hempstead, town..	14,163	355	*352	198	164	154	133
Oyster Bay, town.....	17,561	463	293	254	257	132	118
Rockville Center, village..	2,648	50	42	48	40	.....	.....
Sea Cliff, village.....	1,750	28	23	20	22	.....	.....
Total	69,477	1,731	1,416	1,131	1,063	558	472

* 18 delayed.

New York (Greater)

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
City of New York:							
Borough of Manhattan..	2,174,335	62,990	66,818	37,961	37,726	*31,596	*29,550
Borough of the Bronx ..	290,097	9,574	9,605	8,426	6,338	.....	.....
Borough of Brooklyn ..	1,404,589	41,494	41,908	24,365	23,938	12,714	11,664
Borough of Queens ..	209,685	6,317	6,421	3,838	3,579	1,647	1,647
Borough of Richmond ..	74,174	1,992	2,055	1,515	1,494	450	426
Total	4,244,411	122,367	126,805	74,105	73,076	46,407	432,87

* Includes marriages of Borough of Bronx.

Oneida County — (Continued)

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Vernon, village.....	430	7	8	5	3	.....	.....
Verona, town.....	3,636	59	50	54	43	21	24
Vienna, town.....	1,958	19	20	21	28	14	13
Waterville, village.....	1,510	23	21	20	29	.....	.....
Western, town.....	1,442	23	24	24	20	13	2
Westmoreland, town.....	2,067	24	30	30	24	13	12
Whitesboro, village.....	2,018	34	32	30	24	.....	.....
Whitestown, town.....	4,353	122	139	79	77	91	77
Yorkville, village.....	524	8	10	6	9	.....	.....
Total.....	139,341	3,339	3,157	2,408	2,557	*1,281	1,185

* Includes one delayed return.

Onondaga County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Baldwinsville, village.....	2,961	33	36	35	49	.....	.....
Camillus, town.....	1,880	38	44	31	32	11	26
Camillus, village.....	706	19	21	15	7	.....	.....
Cicero, town.....	2,451	49	46	35	33	15	19
Clay, town.....	2,410	34	42	40	34	11	10
De Witt, town.....	2,718	31	33	41	45	37	37
East Syracuse, village.....	2,996	70	77	38	25	.....	.....
Eastwood, village.....	538	9	15	3	7	.....	.....
Elbridge, town.....	1,507	24	21	26	25	13	17
Elbridge, village.....	569	7	9	5	7	.....	.....
Fabius, town.....	1,199	23	19	19	14	9	9
Fabius, village.....	346	4	2	6	7	.....	.....
Fayetteville, village.....	1,380	25	22	29	31	.....	.....
Geddes, town.....	794	15	5	16	7	44	40
Jordan, village.....	965	5	6	12	19	.....	.....
La Fayette, town.....	1,489	13	22	22	30	9	5
Liverpool, village.....	1,144	26	21	21	9	.....	.....
Lysander, town.....	1,418	30	27	46	40	30	32
Manlius, town.....	3,205	58	62	54	37	41	28
Manlius, village.....	1,236	26	27	22	30	.....	.....
Marcellus, town.....	2,073	32	22	31	18	14	10
Marcellus, village.....	671	10	17	5	10	.....	.....
Onondaga, town.....	5,324	74	68	167	176	37	34
Otisco, town.....	1,131	28	17	18	14	1	6
Pompey, town.....	2,381	39	28	42	45	18	10
Salina, town.....	2,682	27	20	15	17	20	15
Skaneateles, town.....	2,677	56	56	42	37	25	39
Skaneateles, village.....	1,584	29	23	21	19	.....	.....
Solvay, village.....	4,196	83	94	63	89	.....	.....
Spafford, town.....	1,130	23	26	20	13	4	3
Syracuse, city.....	117,503	2,654	2,261	1,949	2,036	1,036	938
Tully, town.....	863	23	17	14	17	11	8
Tully, village.....	600	5	6	11	10	.....	.....
Van Buren, town.....	3,147	29	22	29	24	19	18
Total.....	178,441	3,651	3,234	2,943	3,013	*1,408	1,296

* Includes 3 delayed returns.

Orleans County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Albion, town.....	1,225	21	30	47	36	50	46
Albion, village.....	5,174	80	137	65	79	..	..
Barre, town.....	1,809	34	27	26	18	4	10
Carlton, town.....	2,218	43	46	24	34	19	10
Clarendon, town.....	1,455	23	26	26	17	8	7
Gaines, town.....	1,839	22	30	19	19	8	7
Holley, village.....	1,506	33	39	28	20	..	..
Kendall, town.....	1,638	35	25	26	25	18	15
Lyndonville, village.....	512	12	10	6	9	..	..
Medina, village.....	5,114	92	84	97	93	..	..
Murray, town.....	2,425	57	64	22	26	37	23
Ridgeway, town.....	1,016	27	33	24	30	42	34
Shelby, town.....	3,900	35	26	27	26	37	26
Yates, town.....	1,449	25	18	13	17	17	14
Total.....	31,323	539	595	450	449	240	192

Oswego County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Albion, town.....	1,202	21	17	27	25	10	20
Altmar, village.....	373	9	1	5	4	..	..
Amboy, town.....	771	7	5	10	6	5	6
Boyleston, town.....	743	11	12	13	9	4	8
Central Square, village.....	334	5	5	9	9	..	..
Cleveland, village.....	753	7	11	12	7	..	..
Constantia, town.....	1,542	24	29	32	21	13	8
Fulton, city.....	8,847	219	203	167	150	101	59
Granby, town.....	2,038	28	24	27	26	13	5
Hannibal town.....	1,863	36	31	30	32	20	14
Hannibal, village.....	386	3	1	12	6	..	..
Hastings, town.....	1,839	34	27	24	30	14	18
Lacona, village.....	380	6	6	7	6	..	..
Mexico, town.....	1,810	27	27	35	45	25	12
Mexico, village.....	1,269	12	26	26	17	..	..
New Haven, town.....	1,399	16	25	18	22	7	3
..	1,029	23	27	18	14	6	10
..	2,550	52	50	57	52	15	9
..	22,572	481	486	336	376	177	164
..	1,361	27	24	15	28	13	7
..	868	18	16	15	11	10	10
..	515	2	11	7	5	..	..
..	1,524	42	24	33	34	..	..
..	1,575	21	28	18	33	..	..
..	792	21	16	9	11	6	3
..	2,036	41	32	26	23	29	22
..	1,103	19	18	18	19	12	12
..	734	2	5	15	14	..	..
..	1,362	19	22	12	28	18	29
..	2,246	24	25	31	41	9	9
..	2,339	29	38	28	34	31	19
..	914	9	11	14	10	8	8
..	954	15	13	20	22	4	5
Total.....	70,110	1,310	1,296	1,126	1,774	*553	460

* Includes 3 delayed returns.

Rensselaer County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
.....	1,623	34	27	24	35	16	12
.....	2,714	37	38	42	49	15	12
.....	1,267	24	26	15	23	.....	.....
own.....	1,321	19	10	16	14	6	3
.....	1,075	9	10	18	19	4	4
.....	2,966	13	66	14	38	64	73
age.....	5,251	123	100	81	86	.....	.....
.....	1,536	26	20	22	31	15	12
.....	455	5	7	6	10	.....	.....
town.....	1,222	11	9	26	33	8	4
.....	1,350	22	17	16	25	4	8
.....	3,099	31	35	53	41	18	27
.....	1,143	16	11	12	19	4	7
.....	10,715	158	140	175	150	64	86
.....	2,205	36	33	42	38	11	16
n.....	1,102	14	15	16	21	8	11
age.....	1,191	20	18	7	18	.....	.....
.....	3,157	58	56	56	56	35	27
n.....	1,424	23	24	26	24	14	10
.....	76,910	1,006	887	1,488	1,542	614	604
pe.....	888	11	8	15	12	.....	.....
Total.....	122,637	1,698	1,557	2,208	2,268	900	916

Rockland County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Clarkstown, town.....	7,021	105	95	100	95	44	28
Grand View-on-Hudson, vil- lage.....	356	6	4	7	5	.....	.....
Haverstraw, town.....	1,952	32	7	12	6	49	60
Haverstraw, village.....	6,182	64	78	94	88	.....	.....
Hillburn, village.....	878	22	21	12	20	.....	.....
Nyack, village.....	4,441	69	74	74	94	.....	.....
Orangetown, town.....	5,030	62	76	51	46	85	66
Piermont, village.....	1,193	11	6	20	32	.....	.....
Ramapo, town.....	4,026	83	87	71	74	62	52
South Nyack, village.....	1,848	28	24	18	19	.....	.....
Spring Valley, village.....	2,583	69	50	23	24	.....	.....
Stony Point, town.....	3,862	77	71	67	53	26	11
Suffern, village.....	2,655	43	53	53	51	.....	.....
Upper Nyack, village.....	648	5	11	11	9	.....	.....
West Haverstraw, village..	2,348	40	44	49	55	.....	.....
Total.....	45,032	726	698	674	651	*279	216

* Includes 15 delayed returns.

Saratoga County — Continued

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Milton, town.....	1,888	47	39	67	48	36	36
Moreau, town.....	1,094	16	20	19	13	25	15
Northumberland, town.....	1,255	24	25	18	17	5	5
Providence, town.....	538	7	11	7	6	2	2
Saratoga, town.....	1,715	24	33	23	20	37	27
Saratoga Springs, town.....	1,349	1	3	16	15	55	102
Saratoga Springs, village.....	12,999	246	234	249	250	.....	.....
Schuylerville, village.....	1,529	38	30	19	19	.....	.....
South Glens Falls, village.....	2,097	29	31	24	33	.....	.....
Stillwater, town.....	3,346	27	21	27	27	47	32
Stillwater, village.....	923	11	24	15	22	.....	.....
Victory, village.....	735	15	7	11	9	.....	.....
Waterford, town.....	2,876	61	52	34	56	32	43
Waterford, village.....	3,134	41	41	49	58	.....	.....
Wilton, town.....	1,004	12	7	9	15	8	7
Total.....	62,658	1,089	1,082	962	1,041	388	369

Schenectady County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Duanesburgh, town.....	2,467	45	43	23	31	10	16
Glenville, town.....	2,012	23	23	26	32	17	21
Niskayuna, town.....	1,445	18	29	18	36	8	6
Princetown, town.....	653	8	4	4	5	7	5
Rotterdam, town.....	4,198	80	49	45	97	27	13
Schenectady, city.....	58,387	1,801	1,904	847	920	504	510
Scotia, village.....	2,166	50	59	26	35	.....	.....
Total.....	71,328	2,025	2,111	989	1,156	573	571

Schoharie County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Blenheim, town.....	701	15	4	8	9	5	1
Broome, town.....	1,054	21	10	22	16	7	9
Carlisle, town.....	1,091	10	7	21	17	2	11
Cobleskill, town.....	1,573	29	24	23	27	19	23
Cobleskill, village.....	2,158	24	27	31	38	.....	.....
Conesville, town.....	734	10	10	10	11	1	.....
Esperance, town.....	773	9	2	11	4	10	.....
Esperance, village.....	231	2	5	4	6	.....	.....
Fulton, town.....	1,611	29	36	19	36	11	10
Gilboa, town.....	1,425	23	26	26	19	3	13
Jefferson, town.....	1,304	28	22	20	17	9	.....
Middleburgh, town.....	1,457	23	24	25	27	18	11
Middleburgh, village.....	1,209	10	18	10	20	.....	.....
Richmondville, town.....	950	12	9	12	14	6	.....
Richmondville, village.....	587	6	7	15	18	.....	.....
Schoharie, town.....	1,752	23	18	25	16	11	.....
Schoharie, village.....	1,027	13	10	16	17	.....	.....
Seward, town.....	1,458	29	21	28	19	7	8
Sharon, town.....	1,467	19	20	28	21	20	13
Sharon Springs, village.....	526	9	3	5	4	.....	.....
Summit, town.....	1,146	17	10	21	20	9	14
Wright, town.....	1,060	8	13	18	13	9	7
Total.....	25,294	369	326	398	389	147	155

Steuben County — Continued

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Dansville, town.....	1,270	15	20	17	12	12	10
Erwin, town.....	1,046	20	22	20	22	16	12
Fremont, town.....	914	6	5	9	9	5	7
Greenwood, town.....	1,082	23	10	12	10	10	10
Hammondsport, village....	1,141	21	18	22	22	.....	.....
Hartsville, town.....	664	7	13	5	4	7	.....
Hornby, town.....	940	15	16	13	16	4	4
Hornell, city.....	13,259	301	268	185	209	113	115
Hornellsville, town.....	1,942	10	23	41	22	15	17
Howard, town.....	1,530	15	26	20	22	9	7
Jasper, town.....	1,365	38	40	17	18	8	13
Lindley, town.....	1,174	21	35	15	15	9	13
Painted Post, village.....	1,061	20	21	16	12	.....	.....
Prattsburg, town.....	1,204	25	11	3	3	9	14
Prattsburg, village.....	694	5	4	10	7	.....	.....
Pulteney, town.....	1,384	18	23	26	20	9	8
Rathbone, town.....	973	19	11	12	9	6	6
Savona, village.....	596	5	15	16	7	.....	.....
Thurston, town.....	927	23	8	12	10	5	4
Troupsburg.....	1,725	51	34	21	20	26	20
Tuscarora, town.....	1,070	18	14	14	17	11	8
Urbana, town.....	1,376	19	15	18	21	23	20
Wayland, town.....	1,480	22	27	19	18	16	19
Wayland, village.....	1,220	29	29	19	17	.....	.....
Wayne, town.....	682	13	7	13	6	7	3
West Union, town.....	1,011	21	21	12	12	5	5
Wheeler, town.....	1,006	7	10	9	10	6	8
Woodhull, town.....	1,226	14	20	18	19	16	14
Woodhull, village.....	342	5	8	4	4	.....	.....
Total.....	81,814	1,453	1,405	1,216	1,185	*689	604

* Includes 4 delayed returns.

Suffolk County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Amityville, village.....	2,429	7	8	61	44	.....	.....
Babylon, town.....	3,133	87	65	70	70	55	55
Babylon, village.....	2,357	53	44	28	23	.....	.....
Brookhaven, town.....	12,604	232	184	203	202	104	107
East Hampton, town.....	4,303	84	80	44	30	23	26
Greenport, village.....	2,667	112	*71	33	52	.....	.....
Huntington, town.....	8,433	162	159	129	121	74	54
Islip, town.....	13,721	270	†301	167	193	79	93
Northport, village.....	1,803	46	50	27	29	.....	.....
Patchogue, village.....	3,446	115	82	48	49	.....	.....
Riverhead, town.....	4,950	59	59	58	68	33	39
Sag Harbor, village.....	3,048	68	68	34	44	.....	.....
Shelter Island, town.....	1,105	22	22	15	9	14	13
Smithtown, town.....	3,325	85	58	56	51	17	24
Southampton, town.....	5,763	122	100	92	79	74	70
Southampton, village.....	2,213	50	49	23	24	.....	.....
Southold, town.....	6,322	120	120	66	63	65	59
Total.....	81,653	1,694	1,520	1,154	1,151	538	540

*12 delayed. †21 delayed.

Sullivan County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Bethel, town.....	2,154	25	30	29	26	13	7
Callicoon, town.....	2,026	36	34	36	26	18	14
Cochecton, town.....	1,123	22	26	12	23	6	9
Delaware, town.....	1,814	41	35	28	35	9	11
Fallsburgh, town.....	3,810	97	86	75	61	21	19
Forestburgh, town.....	544	5	6	6	8	4	2
Fremont, town.....	2,110	29	40	38	16	.....	2
Highland, town.....	975	20	15	15	19	5	13
Liberty, town.....	3,359	58	52	81	85	31	35
Liberty, village.....	2,124	40	36	71	92	.....	.....
Lumberland, town.....	749	12	10	8	7	1	1
Mamakating, town.....	2,691	38	45	50	52	19	23
Monticello, village.....	1,388	38	43	51	36	.....	.....
Neversink, town.....	2,009	29	16	20	28	14	12
Rockland, town.....	3,714	50	65	52	52	20	27
Thompson, town.....	2,777	25	30	45	37	40	45
Tusten, town.....	907	25	23	14	19	8	18
Wurtsboro, village.....	508	5	8	8	8	.....	.....
Total.....	34,795	595	600	639	630	*219	241

*Includes one delayed return.

Tioga County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Barton, town.....	1,744	10	18	29	28	78	80
Berkshire, town.....	919	10	17	10	17	8	8
Candor, town.....	2,346	36	33	30	37	27	17
Candor, village.....	802	12	11	22	11	.....	.....
Newark Valley, town.....	1,193	29	28	24	25	18	15
Newark Valley, village.....	909	15	13	12	16	.....	.....
Nichols, town.....	1,004	5	11	19	16	8	9
Nichols, village.....	452	2	2	11	11	.....	.....
Owego, town.....	2,994	48	61	66	67	70	74
Owego, village.....	5,010	43	64	92	91	.....	.....
Richford, town.....	1,001	14	20	12	18	9	7
Spencer, town.....	980	11	25	14	24	12	13
Spencer, village.....	618	5	13	13	17	.....	.....
Tioga, town.....	2,017	31	26	30	45	9	14
Waverly, village.....	4,915	64	82	71	78	.....	.....
Total.....	26,907	335	424	455	501	239	23

Tompkins County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Caroline, town.....	1,704	25	39	26	24	12	8
Danby, town.....	1,246	19	20	21	15	4	6
Dryden, town.....	2,474	33	41	30	35	19	17
Dryden, village.....	749	14	9	7	17	.....	.....
Enfield, town.....	1,111	13	21	14	13	5	3
Freeville, village.....	493	3	4	8	6	.....	.....
Groton, town.....	2,022	29	33	26	40	24	25
Groton, village.....	1,188	10	15	14	16	.....	.....
Ithaca, town.....	1,573	18	17	28	18	4	4

Tompkins County — Continued

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Ithaca, city.....	14,615	291	228	217	248	127	139
Lansing, town.....	2,653	43	41	52	35	24	5
Newfield, town.....	1,338	18	16	12	15	7	8
Newfield, village.....	347	6	4	2	7	.....	.....
Trumansburg, village.....	1,202	16	13	25	28	.....	.....
Ulysses, town.....	1,428	21	14	26	32	13	17
Total.....	34,151	559	515	508	549	239	232

Ulster County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Denning, town.....	688	13	8	10	6	3	2
Ellenville, village.....	2,872	45	33	54	43	.....	.....
Esopus, town.....	4,205	69	79	50	58	29	28
Gardiner, town.....	1,473	30	29	33	19	4	9
Hardenbergh, town.....	657	9	10	8	6	6	4
Hurley, town.....	1,677	27	26	22	33	8	9
Kingston, town.....	439	2	12	5	6	.....	.....
Kingston, city.....	25,556	499	570	519	443	170	184
Lloyd, town.....	2,722	31	42	58	42	22	17
Marbletown, town.....	2,988	73	36	67	43	21	23
Marlborough, town.....	3,917	63	54	50	42	36	25
Marlborough, village.....	.....	15	14	13	12	.....	.....
New Paltz, town.....	1,192	17	18	40	32	16	13
New Paltz, village.....	970	17	11	19	28	.....	.....
Olive, town.....	2,347	70	59	72	57	40	15
Pine Hill, village.....	520	3	3	7	6	.....	.....
Plattekill, town.....	1,823	14	22	24	20	9	7
Riffton, village.....	581	11	13	9	3	.....	.....
Rochester, town.....	2,822	24	31	40	35	17	25
Rosendale, town.....	3,271	55	50	44	45	29	19
Rosendale, village.....	1,399	15	26	20	31	.....	.....
Saugerties, town.....	5,914	119	132	85	96	60	43
Saugerties, village.....	3,833	78	52	60	43	.....	.....
Shandaken, town.....	2,525	35	45	45	31	13	22
Shawangunk, town.....	2,467	58	46	42	40	16	18
Ulster, town.....	3,797	112	26	46	43	19	21
Wawarsing, town.....	4,343	60	70	68	74	46	53
Woodstock, town.....	1,665	28	30	20	26	16	15
Total.....	86,660	1,592	1,547	1,530	1,363	*583	552

*Includes 3 delayed returns.

Warren County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Bolton, town.....	1,561	24	19	15	17	5	15
Caldwell, town.....	845	20	10	20	14	16	12
Chester, town.....	1,965	28	18	30	34	5	18
Glens Falls, city.....	14,650	243	234	232	209	116	110
Hague, town.....	1,054	32	12	18	9	6	5
Horicon, town.....	1,114	17	9	16	16	8	10
Johnsbury, town.....	2,364	22	40	38	47	17	20
Lake George, village.....	644	9	9	8	14	.....	.....
Luzerne, town.....	1,371	17	23	21	17	15	9
Queensbury, town.....	2,131	45	48	38	43	14	23
Stony Creek, town.....	910	19	13	12	9	6	8
Thurman, town.....	833	11	13	13	8	6	5
Warrensburgh, town.....	2,483	37	36	52	48	29	19
Total.....	31,935	524	484	513	485	243	2

Westchester County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Ardsley, village.....	470	12	8	9	3	.....	.....
Bedford, town.....	4,759	78	91	70	57	33	42
Briarcliff Manor, village.....	417	18	9	11	7	.....	.....
Bronxville, village.....	994	22	21	20	8	.....	.....
Cortlandt, town.....	6,230	112	112	81	76	146	94
Croton-on-Hudson, village.....	1,599	40	24	25	29	.....	.....
Dobbs Ferry, village.....	3,515	83	71	76	66	.....	.....
Eastchester, town.....	1,412	38	33	21	18	36	33
Greenburgh, town.....	3,740	74	41	54	63	145	108
Harrison, town.....	2,922	66	59	48	51	14	26
Hastings-on-Hudson, village.....	3,060	99	63	44	39	.....	.....
Irvington, village.....	2,480	53	42	22	35	.....	.....
Larchmont, village.....	1,760	15	17	12	13	.....	.....
Lewisboro, town.....	1,542	24	14	12	26	7	6
Mamaroneck, town.....	*5,653	7	7	6	16	40	35
Mamaroneck, village.....	5,090	109	137	75	69	.....	.....
Mt. Kisco, village.....	1,830	51	32	31	40	.....	.....
Mount Pleasant, town.....	3,393	53	48	182	201	57	80
Mount Vernon, city.....	25,006	789	599	393	388	220	174
New Castle, town.....	1,126	32	27	25	27	15	11
New Rochelle, city.....	20,480	721	721	323	329	198	191
North Castle, town.....	1,483	17	23	16	15	12	6
North Pelham, village.....	850	30	19	15	19	.....	.....
North Salem, town.....	1,169	22	17	18	22	6	11
North Tarrytown, village..	4,750	212	56	82	94	.....	.....
Ossining, town.....	2,764	1	1	4	6	68	63
Ossining, village.....	7,135	185	159	179	160	.....	.....
Peekskill, village.....	13,200	310	286	246	254	.....	.....
Pelham, town.....	†1,841	.....	2	.....	.....	14	10
Pelham, village.....	349	4	6	3	2	.....	.....
Pelham Manor, village.....	638	13	13	7	8	.....	.....
Pleasantville, village.....	1,585	42	56	20	25	.....	.....
Port Chester, village.....	11,198	401	175	207	173	.....	.....
Poundridge, town.....	798	7	10	10	15	3	9
Rye, town.....	2,803	7	5	5	2	203	171
Rye, village.....	4,076	69	62	60	51	.....	.....
Scarsdale, town.....	1,018	26	21	15	15	7	9
Sherman Park, village.....	.....	13	.....	54	.....	.....	.....
Somers, town.....	1,175	27	18	25	23	4	7
Tarrytown, village.....	5,370	87	89	84	81	.....	.....
Tuckahoe, village.....	1,580	99	95	41	29	.....	.....
White Plains, town.....	550	2	2	7	6	110	104
White Plains, village.....	11,579	420	380	234	200	.....	.....
Yonkers, city.....	61,716	1,961	1,948	1,125	1,065	704	634
Yorktown, town.....	2,294	44	29	47	12	12	10
Total.....	228,950	6,495	5,648	4,044	3,868	‡2,068	1,834

* Includes population of villages of Mamaroneck and Larchmont.
† Includes population of villages of Pelham and North Pelham.
‡ Includes 14 delayed returns.

Wyoming County

	Popula- tion	BIRTHS		DEATHS		MARRIAGES	
		1909	1908	1909	1908	1909	1908
Arcade, town.....	887	9	13	12	21	21	17
Arcade, village.....	1,052	21	34	22	16	.....	.....
Attica, town.....	905	18	17	12	10	.....	11
Attica, village.....	1,816	35	36	32	25	.....	.....
Bennington, town.....	1,861	29	27	18	20	5	11
Castile, town.....	1,386	19	11	23	6	16	17
Castile, village.....	1,000	15	9	17	13	.....	.....
Covington, town.....	957	13	11	12	13	5	3

The urban mortality from tuberculosis during 1909 was 175 per 100,000 population, and the rural 120.

There were 2,112 deaths from tuberculosis other than pulmonary, viz.: Laryngeal, 127; meningeal, 1,113; abdominal, 390; Pott's disease, 92; tuberculous abscess, 27; general tuberculosis, 165; other tubercular diseases, 207; making a total of 16,117 deaths from tuberculosis, or 11.5 per cent. of the total deaths occurring in the State.

Pneumonia caused 9,423 deaths, 796 more than in 1908. Influenza was given as the cause of 1,122 deaths. From other diseases of the respiratory organs there were 11,406 deaths.

Cancer caused 7,060 deaths, which is an increase of 506 over the reported mortality for 1908. The urban death rate was 78 per 100,000 population, and the rural 86. In 1908 it was 74 and 79, and in 1907 it was 76 and 77, respectively. The average yearly deaths from cancer during the past twenty-five years is 4,227, the reported mortality having increased from 1,887 in 1885 to 7,034 in 1909, and the death rate has increased from 33.6 to 80.0 per 100,000 population.

Bright's disease caused 9,393 deaths, an increase of 871 over 1908.

Violence was the cause of 9,232 deaths. The rate of deaths per 100,000 population in the urban and rural districts was nearly identical — 107 and 104. The total number was about the same as in 1908, 9,183.









There were 1,494 deaths by suicide, which is twelve less than 1908, and 279 more than occurred in 1907. The chief modes of death were fire-arms, 412; poisoning, 341, and asphyxia, 308. There were 62 suicides from drowning and 201 by hanging.

The mortality from typhoid fever was 1,315, which is 60 less than in 1908. The death rate from typhoid fever is the lowest ever recorded in the State, being 15.0 per 100,000 population.

There were 7,873 deaths from diarrhea and enteritis under two years of age — 1,238 less than in 1908, and 1,940 less than in 1907. Of these deaths, 85 per cent were urban.

While the childhood mortality was a little more than that of 1908, there were less deaths in the first year of life, and mostly in the urban population. Compared with 1907 the decrease is more

DEATH RATE & PER CENT OF DEATHS AT DIFFERENT AGE PERIODS 1909

AGE PERIOD	Nº OF DEATHS	DEATH RATE PER 1000 LIVING AT ALL AGES	PER CENT OF TOTAL MORTALITY
<i>UNDER 1 YEAR</i>	26077 	3.0	18.5
<i>1 YEAR TO 4 YEARS</i>	12201 	1.4	8.7
5 " " 9 "	2971 	.34	2.1
10 " " 19 "	4691 	.54	3.3
20 " " 39 "	22519 	2.6	16.1
40 " " 59 "	28379 	3.3	22.3
60 " " 79 "	32950 	3.8	23.5
<i>OVER 80</i> "	10348 	1.2	7.4
<i>UNKNOWN</i>	.1251	.14	.9
TOTAL DEATHS AT ALL AGES	140261		100.0

Marital condition unknown, 442. Males, 382. Females, 60

The classification by age, nativity, social relations, etc., for the cities of New York and Buffalo are not published in the BULLETIN but are given in tables below as classified by their respective city Departments of Health.

Deaths in Buffalo During the Year 1909

AGE	TOTAL		WHITE		NEGRO		NATIVE	
	Male	Female	Male	Female	Male	Female	Male	Female
Under 1 . . .	709	529	706	528	3	1	709	526
1-4	279	263	279	263	...	...	263	256
5-9	113	102	112	102	1	...	110	92
10-14	53	52	53	50	...	2	48	49
15-19	92	76	91	76	1	...	75	64
20-29	256	221	255	216	1	5	160	154
30-39	315	218	306	213	9	5	185	127
40-49	371	262	367	262	4	...	188	143
50-59	377	260	376	258	1	2	194	141
60-69	324	269	321	285	3	4	121	103
70-79	282	304	282	302	...	2	89	96
80 and over	164	200	164	197	1	3	11	51
Unknown . . . . .	...	...	...	...	...	...	...	...
Total	3,335	2,776	3,311	2,762	24	24	2,183	1,806

AGE	FOREIGN BORN		NATIVITY UNKNOWN		SINGLE		MARRIED		WIDOWED AND DIVORCED	
	Male	Fe-male	Male	Fe-male	Male	Fe-male	Male	Fe-male	Male	Fe-male
Under 1.....		3			709	529				
1- 4.....	16	7			279	263				
5- 9.....	3	10			113	102				
10-14.....	5	3			53	52				
15-19.....	17	10			91	69	1	7		
20-29.....	94	67	2		193	93	62	124	1	4
30-39.....	127	91	3		123	38	183	162	9	18
40-49.....	180	118	3	1	91	35	251	196	29	31
50-59.....	179	119	4		63	34	262	155	52	71
60-69.....	202	186	1		30	24	229	100	65	165
70-79.....	192	206	1		23	19	153	70	106	215
80 and over.....	122	149	1		6	11	54	17	104	172
Unknown.....										
Total.....	1,137	969	15	1	1,774	1,269	1,195	831	366	676

Deaths in New York City According to Age and Color

BOROUGH	Under 1 year	1	2	3	4	Total under 5	5	10	15
Manhattan.....	8,915	2,540	1,001	567	364	13,387	830	476	677
The Bronx.....	991	282	140	77	65	1,555	142	102	195
Brooklyn.....	4,923	1,624	673	416	249	7,865	638	315	505
Queens.....	851	218	92	55	42	1,258	111	57	92
Richmond.....	297	77	30	16	16	436	31	17	25
City.....	15,977	4,741	1,936	1,131	736	24,521	1,752	967	1,494

BOROUGH	20	25	30	35	40	45	50	55	60	65
Manhattan.....	1,226	1,629	1,794	2,156	2,214	2,206	2,065	1,912	2,135	1,817
The Bronx.....	303	399	421	480	440	372	370	307	269	306
Brooklyn.....	833	956	1,135	1,292	1,247	1,257	1,313	1,236	1,436	1,337
Queens.....	131	152	146	179	187	207	218	180	218	237
Richmond.....	38	52	67	83	68	80	91	61	100	198
City.....	2,531	3,188	3,563	4,195	4,156	4,123	4,057	3,696	4,256	3,793

BOROUGH	70	75	80	85	Total	Colored	Chinese	Death-rate	Corrected inter-borough death-rate*
Manhattan.....	1,439	1,010	584	408	37,963	1,325	71	16.12	16.40
The Bronx.....	258	210	115	79	6,424	191	.....	18.46	16.12
Brooklyn.....	1,137	922	542	379	24,365	534	7	15.83	15.90
Queens.....	193	141	68	63	3,838	91	.....	15.67	16.14
Richmond.....	91	79	50	43	1,515	35	.....	19.43	18.62
City.....	3,118	2,362	1,359	972	74,105	2,176	78	16.23	.....

* Corrected interborough death-rate means that the death-rate of each borough is corrected by the exclusion of the deaths of residents of the other boroughs occurring within its limits and the inclusion of the deaths of residents of that borough occurring in other boroughs.

The following table shows the total number of deaths occurring in the State during the year, and the sex, color, social relations and nativity:

Sex	Color	Social relations
Males..... 75,599	White..... 136,944	Married..... 47,245
Females..... 64,662	Negro..... 3,185	Widows..... 14,401
Unknown..... 0	Mongolian..... 77	Widowers..... 13,512
	Indian..... 55	Single..... 64,065
		Divorced..... 100
		Unknown..... 938
Total..... 140,261	140,261	140,261
	NATIVITIES	
United States..... 96,516	Foreign..... 42,695	Unknown..... 1,050

The following shows:

Death Rate and Per Cent. of Deaths at Different Age Periods

AGE PERIOD	Number of deaths	Death rate per 1,000 living at all ages	Per cent. of total mortality
Under one year.....	26,077	3.0	18.5
One to four years.....	12,201	1.4	8.7
Five to nine years.....	2,971	.34	2.1
Ten to nineteen years.....	4,691	.54	3.3
Twenty to thirty-nine years.....	22,519	2.6	16.1
Forty to fifty-nine years.....	28,379	3.3	22.3
Sixty to seventy-nine years.....	32,950	3.8	23.5
Over eighty years.....	10,348	1.2	7.4
Unknown.....	125	.14	.9
Total deaths at all ages.....	140,261	16.1	100.0

The following shows:

Death Rate and Per Cent. of Deaths from Different Causes

	Number of deaths	Death rate per 1,000 living	Per cent. of total mortality
1. General diseases.....	41,018	4.71	29.2
2. Diseases of nervous system.....	11,191	1.29	8.0
3. Diseases of circulatory system.....	18,784	2.16	13.4
4. Diseases of respiratory system.....	20,829	2.40	14.9
5. Diseases of digestive system.....	16,664	1.91	11.9
6. Diseases of genito-urinary system.....	12,196	1.40	8.7
7. The puerperal state.....	1,333	0.15	.95
8. Diseases of skin and cellular tissue.....	649	0.07	.46
9. Diseases of organs of locomotion.....	290	0.03	.21
10. Malformations.....	1,200	0.14	.85
11. Early infancy.....	3,539	0.41	2.52
12. Old age.....	2,189	0.25	1.6
13. External causes.....	9,232	1.06	6.6
14. Ill-defined causes.....	1,147	0.13	0.8
Total deaths from all causes.....	140,261	16.1	100.0

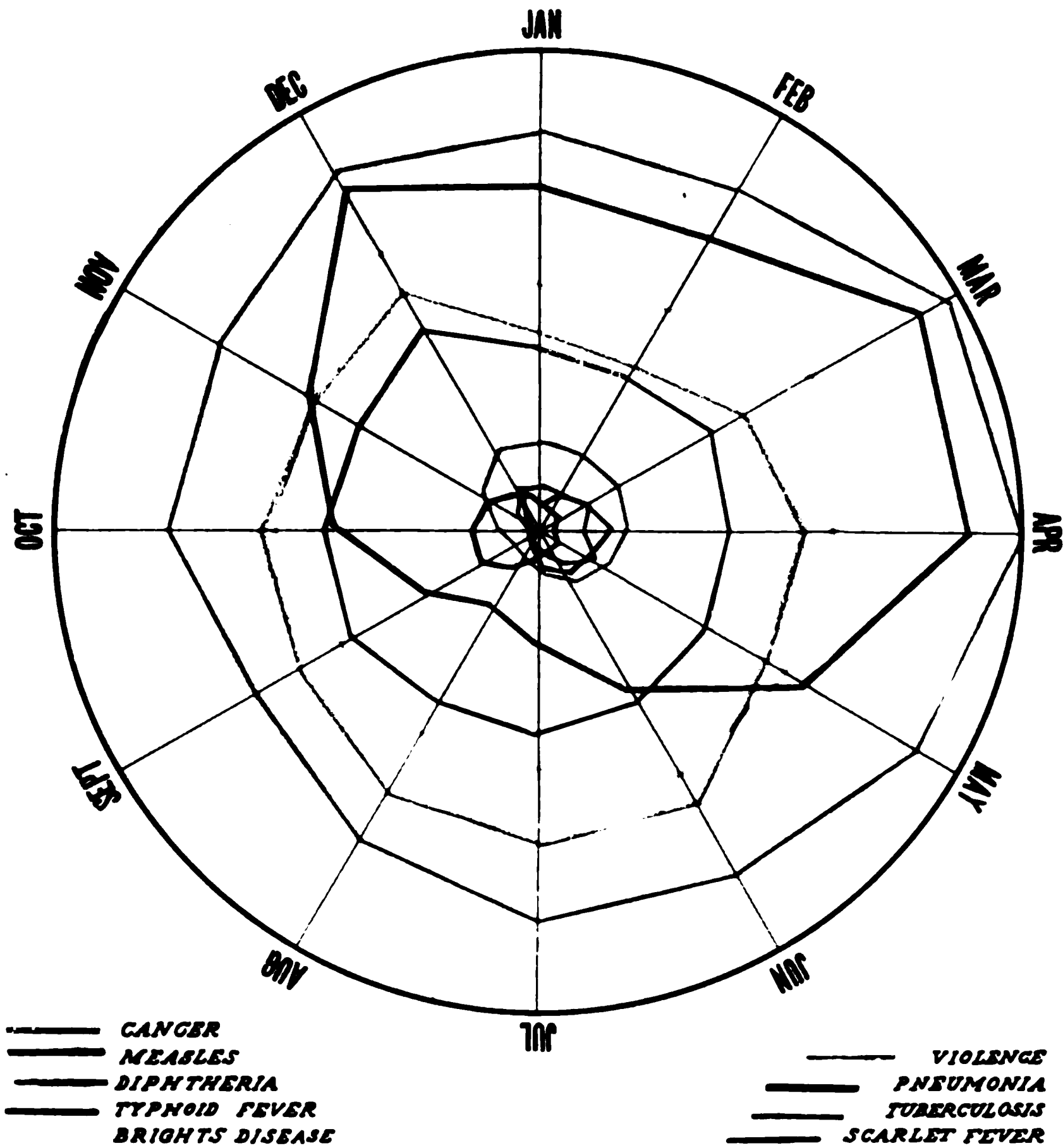
The Following Shows the Seasonal Fatality from the Chief Causes of Death During 1909:

MONTH	Jan.	Feb.	Mar.	April	May	June
Tuberculosis of lungs.....	1,169	1,153	1,362	1,399	1,258	1,142
Violence.....	583	554	681	758	751	916
Pneumonia.....	993	983	1,287	1,265	900	538
Bright's disease.....	724	754	920	851	818	807
Cancer.....	535	522	588	567	578	583
Diphtheria.....	251	238	246	242	212	179
Scarlet fever.....	132	116	147	113	165	110
Typhoid fever.....	101	74	77	55	80	70
Measles.....	79	112	141	195	159	152
Total mortality in State from all causes.....	11,486	11,011	13,114	12,828	12,147	10,712

Seasonal Fatality from the Chief Causes of Death — Continued

MONTH	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Tuberculosis of lungs..	1,128	1,039	958	1,089	1,090	1,209	13,996
Violence.....	914	884	812	809	761	809	9,232
Pneumonia.....	329	262	374	589	773	1,130	9,423
Bright's disease.....	682	675	665	774	783	940	9,393
Cancer.....	598	577	621	618	601	672	7,060
Diphtheria.....	132	103	98	138	208	266	2,313
Scarlet fever.....	65	32	48	44	90	143	1,205
Typhoid fever.....	85	120	183	183	157	121	1,315
Measles.....	126	63	30	36	58	121	1,272
Total mortality in State from all causes.....	11,210	11,617	11,067	11,450	10,884	12,726	140,261

THE FOLLOWING SHOWS THE
SEASONAL FATALITY
 FROM THE
CHIEF CAUSES OF DEATH
DURING 1909



Deaths Per 100,000 Population — City and Rural from —

	Pulmon- ary tubercu- losis	Bright's disease	Pneu- monia
Greater New York.....	194.2	109.0	117.9
Buffalo.....	131.9	59.5	57.8
Cities between 100,000 and 200,000 population.....	141.1	120.0	88.9
Cities between 50,000 and 100,000 population.....	167.2	98.0	116.0
Cities between 20,000 and 50,000 population.....	121.8	113.5	110.1
Cities between 10,000 and 20,000 population.....	105.6	100.8	106.2
Cities under 10,000 population.....	106.9	104.1	123.8
Rural mortality.....	121.1	113.4	101.1

Deaths Per 100,000 Population — City and Rural from —

	Cancer	Typhoid	Diph- theria	Scarlet fever
Greater New York.....	78.3	12.7	38.5	17.7
Buffalo.....	64.3	24.2	25.7	42.4
Cities between 100,000 and 200,000 population.....	95.5	11.8	15.4	9.2
Cities between 50,000 and 100,000 population.....	75.7	14.0	13.4	17.8
Cities between 20,000 and 50,000 population.....	78.0	31.3	21.8	5.6
Cities between 10,000 and 20,000 population.....	79.0	21.6	14.3	7.0
Cities under 10,000 population.....	109.7	31.0	16.7	2.8
Rural mortality.....	87.1	14.9	10.5	4.7

The Following Table Shows the Total Death Rate from

Death rates from tuberculosis by county are given on p. 207.

Principal Causes of Death in the Counties of the State

COUNTY	DIARRHEA		INFLUENZA	
	Number of deaths	Rate per 100,000 population	Number of deaths	Rate per 100,000 population
Albany.....	128	72.6	22	12.5
Allegany.....	15	33.6	14	31.3
Broome.....	33	44.1	17	22.7
Cattaraugus.....	21	31.5	15	22.5
Cayuga.....	49	75.0	16	24.5
Chautauque.....	38	36.7	30	29.0
Chemung.....	17	32.9	13	25.2
Chenango.....	11	29.8	15	40.6
Clinton.....	39	82.5	20	42.3
Columbia.....	27	61.0	4	9.3
Cortland.....	5	16.1	9	29.0
Delaware.....	14	29.7	12	26.5
Dutchess.....	56	68.6	8	9.8
Erie.....	358	70.8	41	8.1
Essex.....	27	79.8	7	20.7
Franklin.....	43	85.4	12	23.8
Fulton.....	4	9.4	8	18.9
Genesee.....	16	43.3	13	35.2
Greene.....	8	25.7	4	12.8
Hamilton.....	0	0.0	0	0.0
Herkimer.....	40	71.3	5	8.9
Jefferson.....	27	32.4	22	26.4
Lewis.....	4	15.0	10	37.5
Livingston.....	13	35.6	8	21.9
Madison.....	11	27.7	12	30.2
Monroe.....	233	94.6	14	54.5
Montgomery.....	55	106.8	4	7.7
Nassau.....	60	74.2	8	10.0
New York city.....	5,138	115.4	334	7.5
Niagara.....	72	77.7	18	19.4
Oneida.....	136	94.1	28	19.4
Onondaga.....	167	90.0	35	18.8
Ontario.....	11	20.0	16	29.0
Orange.....	57	50.9	26	23.3
Orleans.....	15	46.5	6	18.6
Oswego.....	34	48.5	27	38.5
Otsego.....	11	22.8	13	27.0
Putnam.....	5	34.5	3	20.7
Rensselaer.....	65	48.3	24	20.8
Rockland.....	31	61.5	5	9.9
St. Lawrence.....	50	55.1	12	13.2
Saratoga.....	33	51.6	20	31.2
Schenectady.....	80	96.5	8	9.6
Schoharie.....	9	35.7	4	15.8
Schuyler.....	1	6.6	3	19.8
Seneca.....	8	31.6	5	19.8
Steuben.....	25	30.6	17	20.7
Suffolk.....	46	54.3	21	24.7
Sullivan.....	15	40.8	10	27.1
Tioga.....	3	11.2	14	52.0
Tompkins.....	11	32.0	13	37.9
Ulster.....	50	57.7	26	30.0
Warren.....	11	32.8	4	11.9
Washington.....	44	90.2	13	26.7
Wayne.....	20	41.2	13	26.8
Westchester.....	354	133.7	20	7.6
Wyoming.....	14	43.6	11	34.2
Yates.....	5	25.8	6	30.9

IN THE CITIES OF THE STATE

DISEASES OF THE CIRCULATORY SYSTEM		PNEUMONIA		OTHER RESPIRATORY DISEASES		CHRONIC BRIGHT'S		DIARRHEA ENTERITIS (Under 2 years)		VIOLENCE (Accidents, suicides, etc.)	
Deaths	Rate per 100,000 pop. lation	Deaths	Rate per 100,000 pop. lation	Deaths	Rate per 100,000 pop. lation	Deaths	Rate per 100,000 pop. lation	Deaths	Rate per 100,000 pop. lation	Deaths	Rate per 100,000 pop. lation
63	333.0	22	116.3	10	52.9	29	153.3	16	84.6	29	153.3
33	136.4	26	107.5	43	177.8	25	103.3	47	194.3	27	111.6
69	264.2	42	160.8	20	76.6	26	99.5	12	46.0	38	145.5
202	261.5	98	126.8	63	81.6	101	130.8	48	62.3	71	91.9
72	276.5	36	138.0	23	88.3	34	130.5	20	76.8	34	130.5
24	241.4	25	251.4	9	90.5	15	150.8	3	30.2	16	160.9
52	189.6	41	149.5	25	91.2	46	167.7	13	47.4	29	105.7
287	284.9	80	79.4	79	78.4	145	144.0	54	53.6	104	103.2
18	157.2	12	104.8	14	122.2	5	43.7	17	148.5	12	104.8
19	216.1	5	56.8	8	91.0	9	102.3	5	56.8	9	102.3
40	158.3	32	126.6	17	67.2	25	98.9	50	197.8	28	110.8
104	149.7	80	115.1	67	96.5	78	112.3	91	131.0	78	112.3
10,137	227.7	5,249	117.9	7,502	168.5	4,853	109.0	5,138	115.4	4,799	107.8
4,830	209.5	2,566	111.3	4,204	182.3	2,342	101.6	2,547	110.5	2,555	110.8
858	261.2	382	116.2	407	123.9	346	105.3	304	92.6	373	113.5
3,657	242.8	1,921	127.5	2,429	161.2	1,759	116.8	1,825	121.2	1,460	97.0
597	255.4	279	119.0	363	155.3	258	110.4	351	150.1	304	130.1
195	251.1	101	130.0	99	127.4	148	190.5	111	143.0	107	138.0
34	227.8	18	120.6	18	120.6	10	67.0	9	60.3	12	80.4
26	274.5	9	95.0	8	84.5	11	116.1	1	10.6	3	31.7
36	192.0	18	95.9	17	90.6	28	149.2	2	10.7	25	133.2
17	147.0	14	121.1	7	60.5	6	51.9	14	121.1	23	198.9
25	171.1	23	157.4	21	143.7	8	54.8	14	95.8	9	61.6
19	172.2	11	99.7	5	45.3	18	163.1	15	136.0	11	99.7
125	173.1	98	135.7	109	150.9	45	62.3	141	195.2	77	106.7
274	218.5	118	94.1	76	60.6	133	106.0	136	108.4	129	102.9
79	172.2	58	126.4	30	65.4	58	126.4	25	51.2	59	128.6
29	174.6	13	78.3	7	42.1	27	162.6	6	36.1	24	144.5
799	201.4	228	57.5	608	153.3	236	59.5	240	60.5	378	95.3
79	220.8	30	83.8	35	97.8	67	187.3	14	39.1	38	106.2
23	127.0	20	110.4	17	93.9	10	55.2	6	33.1	28	154.7
58	206.1	21	74.6	24	85.2	12	42.6	13	46.2	32	114.0
33	146.4	22	97.6	9	44.3	23	102.1	17	75.4	21	93.2
377	191.5	178	90.4	196	99.5	229	116.3	179	90.9	186	94.5
16	145.6	18	163.8	11	100.1	4	36.4	12	109.2	16	145.6
41	128.1	40	124.9	25	78.1	20	62.5	41	128.0	53	165.6
66	192.5	29	84.6	25	72.9	34	99.2	42	122.5	27	78.7
20	273.4	5	68.4	3	41.0	2	27.3	3	41.0	8	109.4
23	195.6	14	119.1	5	42.5	13	110.6	9	76.5	10	85.0
30	195.6	19	123.9	10	65.2	11	71.7	7	45.6	17	110.8
32	114.7	22	78.9	29	104.0	40	143.4	35	125.5	26	93.2
24	147.4	11	67.6	9	55.3	12	73.7	6	36.9	18	110.6
24	237.6	15	148.5	5	49.5	4	39.6	2	19.8	11	108.9
27	173.3	10	64.2	6	38.5	28	179.7	6	38.5	11	70.6
7	61.6	12	105.5	6	52.8	1	8.8	48	422.2	14	123.1
34	240.7	10	70.8	7	49.6	10	70.8	1	7.1	17	120.3
25	187.0	13	97.2	9	67.3	11	82.3	7	52.4	17	127.2
23	92.2	23	92.2	33	132.4	31	124.4	24	96.3	23	92.2
25	184.6	19	140.3	8	59.1	9	66.5	4	29.5	16	118.1
20	159.5	12	95.7	5	39.9	25	199.4	1	8.0	17	135.6
33	115.8	28	98.2	15	52.6	23	80.7	10	35.1	21	73.7
16	88.9	16	88.9	8	44.4	11	61.1	9	50.0	21	116.7
76	104.0	60	82.2	54	73.9	62	84.9	75	102.7	54	73.9
28	155.0	16	88.6	7	38.8	11	60.9	7	38.7	21	116.3

TOTAL MORTALITY BY MONTHS

	Pul- monary tuber- culosis	Cancer	Other general diseases	Diseases of the nervous system	Diseases of the circula- tory system	Pneu- monia	Other diseases of the respir- atory system	Diar- rhea and enteritis (under 2 years)	Other diseases of the digest- ive system	Bright's disease	Other diseases of the genito- urinary system
January.....	1,169	535	1,039	948	1,752	993	1,235	199	626	724	255
February.....	1,153	522	1,005	890	1,551	983	1,101	204	651	754	225
March.....	1,362	588	829	997	1,827	1,287	1,350	229	683	920	266
April.....	1,399	567	869	999	1,621	1,265	1,357	264	623	851	260
May.....	1,258	578	1,192	1,044	1,629	900	1,035	301	755	818	250
June.....	1,142	583	1,085	881	1,434	538	749	359	669	807	238
July.....	1,128	598	846	852	1,315	329	592	1,470	770	682	215
August.....	1,039	577	840	796	1,332	262	528	2,084	869	675	204
September.....	958	621	799	823	1,279	374	552	1,466	922	665	185
October.....	1,089	618	777	992	1,626	589	784	782	869	774	245
November.....	1,090	601	801	920	1,556	773	856	303	672	783	223
December.....	1,209	672	831	1,069	1,862	1,130	1,267	212	684	940	237
Total.....	13,996	7,060	10,913	11,191	18,784	9,423	11,406	7,873	8,791	9,393	2,803
Total for 1908.	14,347	6,554	7,511	11,989	17,233	8,628	9,849	9,111	8,396	8,512	2,817

TOTAL MORTALITY BY MONTHS

	The puer- peral state	Diseases of the skin	Diseases of the organs of loco- motion	Malform- ations	Early infancy (under 3 months)	External causes	Ill- defined diseases	BIRTHS		
								Total births	Annual birth rate per 1,000 popu- lation	Still births
January.....	119	53	19	104	116	583	234	16,389	22.6	1,133
February.....	112	58	23	76	102	554	240	15,066	20.8	797
March.....	136	52	21	111	406	681	309	16,902	23.3	871
April.....	132	55	22	95	372	758	286	15,069	20.8	832
May.....	116	55	36	113	99	751	282	14,974	20.7	827
June.....	97	64	38	83	106	916	222	16,277	22.4	781
July.....	122	57	31	76	359	914	261	17,590	24.3	816
August.....	97	46	17	121	460	884	295	16,970	23.4	743
September.....	102	57	22	95	416	812	377	16,894	23.2	803
October.....	96	65	18	106	384	809	285	17,306	23.9	783
November.....	92	34	21	101	355	761	284	17,007	23.5	820
December.....	112	53	22	119	364	809	261	22,212	30.6	863
Total.....	1,333	649	290	1,200	3,539	9,232	3,336	202,656	23.3	10,069
Total for 1908.	1,335	560	254	1,137	7,091	9,183	4,549	203,159	23.8	10,546

*Detailed Statement as to Causes of Deaths Occurring in the State
During 1909*

	Jan.	Feb.	Mar.	April	May	June	July
I. GENERAL DISEASES							
(A.) Epidemic Diseases							
Typhoid fever.....	101	74	77	55	80	70	85
Exanthematic typhus.....							
Relapsing fever.....							
Malarial fever.....	9	3	7	5	6	4	7
Smallpox.....		1	1	1			
Measles.....	79	112	141	195	159	152	126
Scarlet fever.....	132	116	147	113	165	110	65
Whooping cough.....	31	43	65	77	101	60	94
(a) Diphtheria.....	240	229	238	236	202	176	127
(b) Croup.....	11	9	8	6	10	3	5
Influenza.....	126	126	248	247	117	44	12
Miliary fever.....							
Asiatic cholera.....							
*Cholera infantum.....	1	7	3	11	10	25	182
Dysentery.....	6	1	6	13	5	11	25
Plague.....							
Yellow fever.....							
Leprosy.....							
Erysipelas.....	42	52	79	52	44	42	29
Other general diseases.....	4	6	4	7	6	6	12
(B.) Other General Diseases							
Septicaemia.....	35	26	32	34	36	25	27
Glanders and farcy.....			1	1		1	
Malignant pustule and charbon.....							
Rabies.....			2			1	1
Actinomycosis, trichinosis, etc.....		2		1			
Pellagra.....							
Tuberculosis of lungs.....	1,169	1,153	1,362	1,399	1,258	1,142	1,128
Tuberculosis of larynx.....	6	17	11	7	15	7	13
Tuberculous meningitis.....	81	99	100	122	106	92	105
Abdominal tuberculosis.....	28	24	41	26	35	42	33
Pott's disease.....	7	10	11	7	7	7	12
Tuberculous abscess.....	12		1	3	1	3	
White swelling.....	3	2	7	2	5	1	3
Tuberculosis of other organs.....	10	12	14	17	21	19	21
General tuberculosis.....	20	13	12	14	12	19	15
Scrofula.....				1			
Syphilis.....	53	44	58	46	45	50	45
Gonorrhea of the adult.....	3				1	3	3
Gonorrheal infections of children.....				3	1	1	1
Cancer of mouth.....	24	21	20	22	23	29	25
Cancer of stomach and liver.....	188	214	214	215	224	198	245
Cancer of intestines and peritoneum.....	58	68	75	72	74	77	69
Cancer of skin.....	18	12	23	11	20	21	12
Cancer of breast.....	52	43	56	62	43	55	58
Cancer of female genital organs.....	101	75	99	88	82	97	94
Cancer of other or unspecified organs.....	94	89	101	97	112	106	95
Tumor (noncancerous).....	13	16	10	10	20	14	18
Acute articular rheumatism.....	51	53	62	62	67	49	43
Chronic rheumatism and gout.....	45	39	42	43	41	50	30
Scurvy.....	1		1	3		1	4
Diabetes.....	115	116	111	116	120	103	114
Exophthalmic goiter.....	8	6	15	10	18	9	13
Addison's disease.....	3		6	6	4	7	3
Leukemia.....	13	10	11	13	13	11	11
Anemia, chlorosis.....	31	38	51	48	49	44	38
Alcoholism.....	57	49	65	75	72	66	53
Lead poisoning.....	1	1			6	1	2
Other professional intoxications.....			5		10	1	4
Other chronic poisonings.....		2	2		1		2
II. NERVOUS SYSTEM							
Encephalitis.....	4	2	4	3	7	7	2
Meningitis.....	79	89	105	89	108	92	83
Cerebrospinal meningitis.....	32	43	49	46	51	41	43
Locomotor ataxia.....	20	13	9	21	14	8	20
Other diseases of spinal cord.....	38	32	27	27	41	41	36
Apoplexy.....	435	420	500	469	468	390	400

* Of these 20 were over 2 years of age.

	Aug.	Sept.	Oct.	Nov.	Dec.	Total
I. GENERAL DISEASES						
(A) Epidemic Diseases						
Typhoid fever.....	129	183	183	157	121	1,315
Exanthematic typhus.....						
Relapsing fever.....						
Malarial fever.....	7	8	10	10	2	78
Smallpox.....			1			4
Measles.....	63	30	36	58	121	1,272
Scarlet fever.....	32	48	44	90	143	1,205
Whooping cough.....	89	85	59	38	41	783
(a) Diphtheria.....	100	94	128	190	251	2,211
(b) Croup.....	3	4	10	18	15	102
Influenza.....	8	18	26	42	108	1,122
Millary fever.....						
Asiatic cholera.....						
Cholera infantum.....	402	312	106	20	13	1,092
Dysentery.....	97	77	46	19	8	314
Plague.....						
Yellow fever.....						
Leprosy.....				1		1
Erysipelas.....	16	26	19	31	40	472
Other general diseases.....	20	12	13	3	15	108
(B) Other General Diseases						
Septicæmia.....	18	14	21	14	30	312
Glanders and farcy.....						3
Malignant pustule and charbon.....	1	1		1	2	5
Rabies.....		1		2	1	8
Actinomycosis, trichinosis, etc.....		1	2	1	1	8
Pellagra.....						
Tuberculosis of lungs.....	1,039	958	1,089	1,090	1,209	13,996
Tuberculosis of larynx.....	9	9	6	8	19	127
Tuberculous meningitis.....	106	78	72	66	86	1,113
Abdominal tuberculosis.....	22	41	36	31	31	390
Pott's disease.....	5	9	5	7	5	92
Tuberculous abscess.....		1	3	1	2	27
White swelling.....	3	5	3	3	4	41
Tuberculosis of other organs.....	10	8	9	13	12	166
General tuberculosis.....	8	16	16	14	6	165
Scrofula.....				1	1	3
Syphilis.....	37	49	34	53	51	565
Gonorrhea of the adult.....	2	1	2		1	16
Gonorrheal infections of children.....		3	3	1	2	15
Cancer of mouth.....	16	17	16	31	23	267
Cancer of stomach and liver.....	210	244	227	241	257	2,677
Cancer of intestines and peritoneum.....	85	88	84	76	100	926
Cancer of skin.....	16	16	16	12	25	202
Cancer of breast.....	44	61	63	65	63	665
Cancer of female genital organs.....	108	93	109	89	111	1,146
Cancer of other or unspecified organs.....	98	102	103	87	93	1,177
Tumor (noncancerous).....	11	7	7	6	7	139
Acute articular rheumatism.....	39	33	31	57	40	587
Chronic rheumatism and gout.....	37	30	36	34	56	483
Scurvy.....	2	2	1	1	1	17
Diabetes.....	92	103	122	115	124	135
Exophthalmic goiter.....	5	6	7	10	9	116
Addison's disease.....	3	6	4	3	2	47
Leukemia.....	15	13	7	9	20	146
Anemia, chlorosis.....	48	27	34	43	37	488
Alcoholism.....	66	75	76	83	80	817
Lead poisoning.....	2	2	1	4	2	22
Other professional intoxications.....						20
Other chronic poisonings.....	4	1	9		6	27
II. NERVOUS SYSTEM						
Encephalitis.....	5	6	4	3	7	54
Meningitis.....	81	97	95	79	87	1,084
Cerebrospinal meningitis.....	44	46	35	24	31	485
Locomotor ataxia.....	18	13	11	15	22	184
Other diseases of spinal cord.....	40	70	79	54	52	537
Apoplexy.....	384	355	448	451	519	5,239

	Aug.	Sept.	Oct.	Nov.	Dec.	Total
II. NERVOUS SYSTEM—(Continued)						
Softening of brain.....	14	13	19	10	25	222
Paralysis.....	62	87	111	94	101	1,117
General paralysis of insane.....	37	31	31	49	41	465
Other forms of mental disease.....	7	3	14	13	11	142
Other diseases of brain.....				2		11
Epilepsy.....	25	28	23	25	34	365
Convulsions (nonpuerperal).....			1	1	2	9
Convulsions of children.....	55	52	63	58	88	816
Tetanus.....	11	12	9	4	7	109
Chorea.....		1	2	1	3	21
Other diseases of nervous system.....	47	45	72	52	56	614
Diseases of the eye and its adnexa.....	1					8
Diseases of the ear.....	9	10	10	8	14	194
III. CIRCULATORY SYSTEM						
Pericarditis.....	17	6	9	13	12	153
Endocarditis.....	158	198	255	195	260	2,350
Heart disease.....	831	776	1,002	969	1,175	11,679
Angina pectoris.....	33	49	36	48	54	563
Diseases of arteries.....	209	190	242	269	283	3,134
Embolism and thrombosis.....	37	34	38	38	44	466
Diseases of veins.....	4	5	2	2	2	66
Diseases of lymphatics.....	2	3	1	4	2	30
Hemorrhages (except of lungs).....	7	8	14	8	13	132
Other diseases of circulatory system.....	34	10	27	10	17	211
IV. RESPIRATORY SYSTEM						
Diseases of nasal fossae.....	1	1			2	12
(a) Laryngitis.....		2	5	6	10	64
(b) Other diseases of larynx.....	1	4	5	7	7	57
Diseases of the thyroid body.....	4		5		1	20
Acute bronchitis.....	62	83	109	127	203	1,597
Chronic bronchitis.....	42	39	81	80	88	878
Bronchopneumonia.....	314	338	469	528	798	7,174
Pneumonia.....	262	374	589	773	1,130	9,423
Pleurisy.....	24	26	30	28	41	500
Congestion of lungs.....	22	15	20	23	32	330
Gangrene of lungs.....	2		1		7	39
Asthma.....	16	10	15	27	33	265
Emphysema.....	7	4	9	6	11	90
(a) Hemorrhage of lungs.....	8	2	4	3	5	48
(b) Other diseases of respiratory system.....	25	28	31	21	29	332
V. DIGESTIVE SYSTEM						
Diseases of mouth.....	4	1	7	8	2	41
(a) Tonsillitis.....	4	3	4	6	4	45
(b) Diseases of pharynx.....	7	10	9	11	9	113
Diseases of esophagus.....	5	1	3	3		24
Ulcer of stomach.....	31	25	32	36	32	353
Gastritis.....	38	37	35	36	33	417
(b) Other diseases of stomach.....	73	93	100	65	67	861
Dentition.....	4	2		2	1	24
Diarrhea and enteritis (under 2 years).....	1,691	1,161	679	283	199	6,801
Diarrhea and enteritis (2 years and over).....	228	249	176	87	78	1,384
Intestinal parasites.....	1	1	1			8
(a) Hernia.....	68	30	78	64	60	730
(b) Obstruction of intestines.....	27	54	35	28	31	393
Other diseases of intestines.....	29	26	31	16	23	274
Acute yellow atrophy of liver.....	4	1	4	6	5	41
Hydatid tumors of liver.....	1			1	1	8
Cirrhosis of liver.....	128	151	154	134	152	1,708
Biliary calculi.....	12	20	18	16	28	251
Other diseases of liver.....	25	38	28	23	30	363
Diseases of spleen.....	4	2				16
Peritonitis (nonpuerperal).....	38	44	38	30	32	475
Appendicitis.....	105	100	82	71	80	984
Other diseases of digestive system.....	26	27	31	29	15	258

	Aug.	Sept.	Oct.	Nov.	Dec.	Total
VI. GENITO-URINARY SYSTEM						
Acute nephritis.....	92	87	112	105	121	1,327
Bright's disease.....	675	665	774	783	940	9,393
Other diseases of kidneys.....	13	8	23	18	24	206
Calculi of urinary tract.....	3	1	2	2	4	35
Diseases of bladder.....	33	30	30	29	33	401
Diseases of urethra, urinary abscess, etc.	3	2	2	3	1	32
Diseases of prostate.....	16	17	35	16	20	232
Nonvenereal diseases of (male) genital organs.....			1	1	2	13
Metritis.....	1	1	2	3	2	19
Uterine hemorrhage (nonpuerperal)....	1	1	3	9	2	20
Uterine tumor (noncancerous).....	13	10	12	8	6	166
Other diseases of uterus.....	6	4	3	5	4	60
Ovarian tumors.....	10	6	3	4	8	81
Diseases of tubes.....	3	6	3	3	1	44
Other diseases of female genital organs.	9	12	14	17	9	158
Nonpuerperal diseases of the breast (cancer excepted).....	1					9
VII. CHILDBIRTH						
Accidents of pregnancy.....	22	20	16	16	13	209
Puerperal hemorrhage.....	6	9	7	9	16	111
Other accidents of labor.....	13	11	10	6	8	106
Puerperal septicemia.....	31	21	33	27	50	455
Puerperal convulsions.....	18	26	22	24	17	301
Puerperal phlegmasia alba dolens.....		4		3	1	24
Other puerperal accidents.....	7	11	8	7	7	126
Puerperal diseases of the breast.....						1
VIII. DISEASES OF THE SKIN						
Gangrene.....	24	39	41	21	25	353
Carbuncle.....	6	3	4	1	5	52
Abscess.....	11	7	14	9	19	168
Other diseases of the skin.....	5	8	6	3	4	76
IX. LOCOMOTOR SYSTEM						
Diseases of bones.....	14	20	17	18	21	259
Diseases of joints.....	3	1	1	3		12
Amputation.....						2
Other diseases of organs of locomotion.		1			1	17
X. MALFORMATIONS						
Hydrocephalus.....	43	8	9	36	12	465
Congenital malformation of heart, cyanosis.....	67	77	90	55	67	584
Other congenital malformations.....	11	10	7	10	40	151
XI. EARLY INFANCY						
Premature birth.....	151	119	118	141	143	2,660
Congenital debility.....	460	416	384	355	364	3,539
Other diseases of early infancy.....	12	12	23	37	27	324
Lack of care.....	15	37	30	19		190
XII. OLD AGE						
Old age.....	154	173	162	188	185	2,189
XIII. VIOLENCE						
Suicide by poison.....	25	29	31	26	34	341
Suicide by asphyxia.....	22	22	21	29	19	308
Suicide by hanging or strangulation...	16	12	16	16	17	201
Suicide by drowning.....	8	5	5	3	2	62
Suicide by firearms.....	28	28	42	34	39	412
Suicide by cutting instruments.....	7	4	15	8	5	96
Suicide by jumping from high places...	2	6	4	3	6	60
Suicide by crushing.....		1	1	3		6
Other suicides.....	1	1		1		8
Fractures.....	61	66	63	59	61	664
Dislocations.....	2	4	6	3	4	33
Burns and scalds.....	44	67	65	100	78	736

	Jan.	Feb.	Mar.	April	May	June	July
XIII. VIOLENCE—(Continued)							
Burning by corrosive substances.....						1	
Heat and sunstroke.....						92	43
Cold and freezing.....	7	2	4	4	2		
Electric shock.....	1	4	5	6	5	8	8
Drowning.....	12	21	20	63	110	159	193
Starvation, privation, etc.....	1			1	1		2
Inhalation of poisonous gases.....	48	25	51	38	24	18	7
Other accidental poisonings.....	20	24	20	21	27	21	24
Accidental gunshot wounds.....	9	6	5	6	7	7	10
Injuries by machinery.....	6	8	4	10	6	7	8
Injuries in mines and quarries.....				1	17	2	
Railroad accidents and injuries.....	57	60	67	77	91	93	110
Injuries by horses and vehicles.....	24	13	33	47	32	43	35
Other accidental traumatism.....	82	105	118	123	130	125	133
Suffocation.....	14	14	8	9	14	9	4
Injuries at birth.....	37	47	51	42	27	50	45
Homicide.....	20	18	23	31	24	24	22
Other external violence.....	13	12	16	24	12	16	12
Opium habit.....					3		
XIV. ILL-DEFINED DISEASES							
Dropsy.....	3	3	5	3	3	3	4
Sudden death.....	1						
Heart failure.....	4	4	11	7	12	5	5
Inanition.....	1		10	3	1	1	2
Debility (over 3 months).....	1				2		
Marasmus.....	7	40	55	55	8	17	17
Fever.....	1	1		1	3	1	
Other ill-defined diseases.....	31	3	5	3	40	43	69
Unknown.....		3	3		2		5
Total.....	11,486	11,011	13,114	12,828	12,147	10,712	1,210

	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
XIII. VIOLENCE—(Continued)						
Burning by corrosive substances.....					1	2
Heat and sunstroke.....	20					155
Cold and freezing.....			2	3	7	31
Electric shock.....	5	3	6	2	4	57
Drowning.....	172	99	66	49	33	1,006
Starvation, privation, etc.....	5	4		2	2	18
Inhalation of poisonous gases.....	17	28	43	44	64	408
Other accidental poisonings.....	24	21	13	16	20	251
Accidental gunshot wounds.....	4	8	6	7	11	86
Injuries by machinery.....	11	5	12	13	15	105
Injuries in mines and quarries.....	2		5	1	1	29
Railroad accidents and injuries.....	98	108	105	104	101	1,071
Injuries by horses and vehicles.....	38	47	64	29	38	443
Other accidental traumatism.....	176	140	129	121	120	1,502
Suffocation.....	4	6	7	16	24	129
Injuries at birth.....	46	49	33	33	38	498
Homicide.....	36	28	19	18	23	286
Other external violence.....	10	21	27	18	41	222
Opium habit.....			3			6
XIV. ILL-DEFINED DISEASES						
Dropsy.....	1	5	4	6	3	43
Sudden death.....						1
Heart failure.....	9	8	6	10	16	97
Inanition.....	5	9	4	6	3	45
Debility (over 3 months).....						3
Marasmus.....	119	58	26	57	24	483
Fever.....	1		1			9
Other ill-defined diseases.....	6	116	82	6	26	430
Unknown.....		8		11	4	36
Total.....	11,617	11,067	11,459	10,884	12,726	140,261

Total Mortality for the Year 1909 in the Sanitary Districts
— (Continued)

SANITARY DISTRICTS	EPIDEMIC DISEASES								
	Typoid fever	Malarial diseases	Smallpox	Measles	Scarlatina	Whooping cough	Diphtheria and croup	Infuenza	Erysipelas
MARITIME DISTRICT:									
City of New York:									
Borough of Manhattan	262	7	2	388	359	220	962	166	224
Borough of the Bronx	63	3		58	49	34	103	16	18
Borough of Brooklyn	191	24		508	327	118	557	138	64
Borough of Queens	37	4		30	42	23	73	10	3
Borough of Richmond	11	1		12	10	6	20	4	2
	564	39	2	996	787	401	1,715	334	311
	4	1		2	1	1	2	2	1
	6	1		2	1	4	10	3	1
	1				1	3	6	2	1
	1				1		2		1
	2						1	4	
	1				3	3	1	4	1
							4		
	1							2	
	5			1	2	2	9	10	2
	1				1				1
						2			
	2			2				1	1
	1	1		3		5	5		1
				1	1	2	7	1	3
	4			4		3	1	1	
	2					1	3	3	1
	1			5	1	1	3	1	2
					1				
	2					1	1		
	2		1	15		2	3	1	1
	5	5		1	18		18	1	8
	3	1		1	6	6	11	8	5
Total for the District	613	40	3	1,033	825	439	1,807	383	330
	19			7	4	9	19	9	3
	2		1	11		6	5	1	4
						2			
	1	1		1		5		6	
	2						7	6	1
	1					3			1
	1				6	3	1	4	3
Co.)				1		1			
	2					3	1		
Co.)				2	2	7	5	2	1
	3			4		2	3		
Catskill, village (Greene Co.)	1				1		1		1
	1					1			1
	1	1			1	1	3	3	1
	3	1			1	1	1	2	
Co.)	4				2	1	1	4	2
	13				2	2	2	3	1
	2							5	
	3				1				1

Total Mortality for the Year 1909 in the Sanitary Districts
— (Continued)

Total Mortality for the Year 1909 in the Sanitary Districts
— (Continued)

SANITARY DISTRICTS	EPIDEMIC DISEASES								
	Typhoid fever	Infantile diseases	Smallpox	Measles	Scarlatina	Whooping cough	Diphtheria and croup	Influenza	Erysipelas
	1	1			1	1	5	3	
	4	1		2	3	2	5	9	
				2			1	3	
		1				1		3	
	4							3	
	17				6	10	6	12	4
	9				3	4	2	10	
	1	3			1	3	1		1
	1				1	1		1	2
	1								
	1	2		3		7	2	4	1
	1			1			5	3	
	2			1			9	5	1
	2			1		1		5	
				1				1	
	2	1		6		8	3	12	
Totals for the District	146	13	1	50	36	85	105	126	17
ADIRONDACK AND NORTHERN DIS.									
	3					3	1	1	2
	1			3	1	5	2	19	3
	4							1	1
	1			1					
	6				1	6	2	11	2
	6			13		2	3	7	3
						1	1		
	2	2				1		1	
	1								
	11	1			1	5	2	5	
	6				1	7		16	
	1								2
	5			2		3		10	
	2							1	
	1					2	1		
	1					2	3		
	4			3		3	3	2	3
	7			2		11	4	9	3
	1						1	1	
	4							3	
	2							1	
	2				1		2	1	
					2		1	3	
				1	2			4	
				1			2	1	
	2			3	1		2	2	1
	4			1			2	2	
Totals for the District	80	3		29	8	54	32	100	18
CO. 1									
Co.)	2						2	2	
Co.)	1	1			1	1	10	1	
Co.)						2	1	5	
Co.)					1				

Total Mortality for the Year 1909 in the Sanitary Districts
— (Continued)

SANITARY DISTRICTS	Other diseases of the genito-urinary system	The puerperal state	Diseases of the skin	Diseases of the organs of locomotion	Malformations	Early infancy (under three months)	External causes	Ill-defined diseases	Deaths	
									Total births	Still births
d)	1	3			2	6	6	2	123	3
	14	3	4		7	74	10	4	46	3
	5	2	1		3	23	3	1	123	3
e.)	2	2	1		1	3	1	2	158	6
	2	2	1		1	17	2	2	1,006	58
	33	11	5	4	9	47	71	46	1,006	58
	10	4	1		2	5	30	15	136	3
	4	1	1		3	4	5	1	60	2
	1	1	1		1	1	1	1	105	2
f.)	3	2	1		2	3	9	1	60	1
	1	2	1		1	2	9	1	43	1
	5	2	1		4	3	21	6	45	0
	2	1	1		1	2	2	4	80	6
	1	1	4		2	14	28	12	499	16
	14	2	4		2	14	14	2	73	3
	1					1	6	1	70	0
						1	2	1	78	2
	16	8	4	3	3	13	50	25		
Totals for the District	310	85	71	16	94	313	863	319		
IERN										
	5	1	1			13	12	7	222	11
	6	5	2	1	4	14	23	28	122	4
	2		1			4	3	6	94	6
Co.)	1	1			1	2	1	3	65	6
(Co.)					1	1	2	1		
	10	6	2		9	21	27	33		
	7	4	8		8	16	32	22		
		1	1			2	3	1		
		2	1			1	6	1	35	2
		1	1		2	2	7	2	81	0
	1		1	1		1	4	4	54	3
	9	6	2		4	8	32	10	519	23
	12	3	5		5	13	23	23		
	7	3	2		4	6	4	2	45	0
	2	3	2	1	1	3	22	14		
Co.)	2	1	2		2	1	2	4	91	9
(Co.)	1				2	1	6	6	98	0
	1	3			2	1	2	3	103	4
e.)	6	3	1	1	4	7	12	10	254	9
			3		1	2	2	6	60	7
	22	11	4		6	20	39	31		
	3	1	6		2	12	18	7	243	11
	7	4	2		6	6	17	12		
Co.)	2	2	2		1	1	5	2	126	4
(Co.)						1	4	4	115	5
		1	4			1	5	1	66	2
e.)	1	2		1		3	4	1	91	6
	5	2	3		4	1	8	2	130	3
Totals for the District	115	69	49	5	66	166	253	253		
	4	1	3		2	2	3	7	161	4
	12	2	2		3	4	25	3	368	
	4	2	4	1	1	4	11	13		
	1					2	4	2	120	
	2				2	4	8	2	162	

Total Mortality for the Year 1909 in the Sanitary Districts
— (Continued)

EPIDEMIC DISEASES			
	Erysipelas	Cerebro-spinal meningitis	
Utica (Onondaga Co.)	2	2	
Whitestown, town (Onondaga Co.)	4	1	
Rest of county	3	2	
Ballston Spa, village (Saratoga Co.)	1	1	
Maloneville, village (Saratoga Co.)	1	2	
Saratoga Springs, village (Saratoga Co.)	1	1	
Watertown, town (Saratoga Co.)	3	1	
Rest of county	1	1	
Schenectady (Schenectady Co.)	3	1	
Rest of county	1	1	
Cubertsville, town (Schuylkill Co.)	1	1	
Rest of county	1	1	
Totals for the District	21	25	
SOUTHERN TIER DISTRICT:			
Wellsville, village (Allegany Co.)	2	1	
Rest of county	2	3	
Binghamton (Broome Co.)	2	1	
Eastershire, village (Broome Co.)	2	1	
Rest of county	1	1	
Olean (Cattaraugus Co.)	1	1	
Salamanca, village (Cattaraugus Co.)	1	1	
Rest of county	1	5	
Dunkirk (Chautauque Co.)	1	1	
Fredonia, village (Chautauque Co.)	1	1	
Jamestown (Chautauque Co.)	1	1	
Westfield, village (Chautauque Co.)	3	2	
Rest of county	4	1	
Fleming (Chemung Co.)	1	1	
Horseheads, town (Chemung Co.)	1	1	
Rest of county	1	1	
Bath, village (Steuben Co.)	2	1	
Corning (Steuben Co.)	14	6	
Hornell (Steuben Co.)	2	1	
Rest of county	1	1	
Carthage, town (Tioga Co.)	1	1	
Owego, village (Tioga Co.)	1	1	
Waverly, village (Tioga Co.)	2	2	
Rest of county	2	2	
Totals for the District	71	120	18
EAST CENTRAL DISTRICT:			
Norwich, village (Chenango Co.)	3	2	
Rest of county	13	1	
Cortland (Cortland Co.)	2	1	
Homer, village (Cortland Co.)	2	1	
Rest of county	3	1	
Sidney, town (Delaware Co.)	3	1	
Walton, town (Delaware Co.)	4	1	
Rest of county	4	2	
Canastota, village (Madison Co.)	1	1	
Cazenovia, town (Madison Co.)	3	1	

Total Mortality for the Year 1909 in the Sanitary Districts
— (Continued)

SANITARY DISTRICTS	Other diseases of the genito-urinary system	The puerperal state	Diseases of the skin	Diseases of the organs of locomotion	Malformations	Early infancy (under three months)	External causes	Ill-defined diseases	Births	
									Total births	Still births
	2	1	1		1	2	1	7	120	6
	3	1	1			6	23	7	323	5
	3	2	3	1	5	8	19	26		
	10	7	3		3	11	28	12	749	8
	1						2	1	48	0
	3	2			2	10	14	20		
	1		1			1	1	2	52	6
	2	2			2	2	2	4	62	3
	3	4	5	1	1	6	29	12	481	10
	39	14	4	1	14	10	78	14	1,916	108
	3	2			4	5	7	2	164	7
	15	5	6	2	9	7	30	24		
	1					2	3	3	68	1
	14	2				5	6	2	152	9
	9	6	1		1	3	17	2	246	16
	3						6	6	162	0
	9	5	7		7	5	18	22		
	14	9	6	2	15	19	54	6	1,801	61
	4	2		1	3	6	16	3		
						1	4	4	53	4
	11		3	2		7	18	14		
Totals for the District	176	69	52	11	75	150	433	220		
SOUTHERN TIER DISTRICT:										
	1					3	4	7	62	2
	21	7	3		3	9	20	25		
	21	8	5	2	4	22	59	17	943	30
	2				2		3		72	2
	17	1	5	1	3	7	36	23		
	4	4				3	21	9	331	14
		2					9	3	141	6
	10	4	6	2	5	10	27	16		
	3	4		1	2	8	21	4	524	16
	1	1				2	2	2	115	6
	6	2	1	1	4	5	21	9	594	20
	1	2	1		1	4	9		69	2
	19	7	5	1	7	9	41	35		
	18	3	1		4	5	38	4	537	30
	2	2	1			1	4	6	63	2
	12	1				2	14	4		
	2					1	7	3	34	0
	5	5	1	1	2	7	17	9	271	13
	9	3	2		3	1	17	8	301	5
	2	4	23	2	3	8	51	66		
							1	9	48	0
				1			9	2	43	0
	4	1			1	2	5	1	64	6
	7	2	5		2	6	22	12		
Totals for the District	201	63	59	13	48	115	467	276		
	1	1	1		2	5	5		13	
	19	2	2		7	7	23	14		
	4		1			1	1	2	23	
		1	1		2	1	3	2	37	2
	6					6	12	4		
	2		1			2	2	5	66	4
	1		1	1	1	2	4	2	98	2
	12	7	3		5	12	31	26		
	1					3	3	1	20	0
Cassio										
Cassio, town (Madison Co.)	1	1				3	3	2	66	0

Total Mortality for the Year 1909 in the Sanitary Districts
— (Continued)

SANITARY DISTRICTS	EPIDEMIC DISEASES				
	Whooping cough	Diphtheria and croup			
EAST CENTRAL DISTRICT—(Cont'd)					
Hamilton, town (Madison Co.)....		1	1		
Oneida (Madison Co.)..			6		2
Rest of county					
Haldwinsville, village (Onondaga Co.)			1		1
DeWitt, town (Onondaga Co.)	1				
East Syracuse, village (Onondaga Co.)		2			
Salvay, village (Onondaga Co.)		2			
Syracuse (Onondaga Co.)	35	28	13	5	1
Rest of county	7	3	21	3	
Cooperstown, village (Otsego Co.)					
Oneonta (Otsego Co.)		2			
Worcester, town (Otsego Co.)		1	2		
Rest of county			10	2	1
Liberty, town (Sullivan Co.)	1			1	
Rest of county	5	1	10	1	1
Totals for the District	58	43	108	17	6
WEST CENTRAL DISTRICT:					
Auburn (Cayuga Co.)	2	3	1	1	1
Rest of county	3		15	2	
Hatavia, village (Genesee Co.)	2	2	4		
Le Roy, village (Genesee Co.)			1		
Rest of county	2	5	5	2	1
Danville, village (Livingston Co.)		1			
Mt. Morris, village (Livingston Co.)					
Rest of county	1		8	2	
Canandagua, village (Ontario Co.)			3		
Geneva (Ontario Co.)	1	1	4		
Manchester, town (Ontario Co.)			2		
Phelps, town (Ontario Co.)			1		
Rest of county	3	2	6	2	
Hector, town (Schuyler Co.)				1	
Rest of county	1		2	1	
Seneca Falls, village (Seneca Co.)		2	1	1	
Waterloo, village (Seneca Co.)		2		1	
Rest of county	2		4	1	
Ithaca (Tompkins Co.)		6	3		
Rest of county	1	1	10		
Perry, village (Wyoming Co.)					
Warsaw, town (Wyoming Co.)			2	1	
Rest of county	2		9		
Penn Yan, village (Yates Co.)					
Rest of county			6		
Totals for the District	24	25	91	16	2
LAKE ONTARIO AND WESTERN DISTRICT:					
Amherst, town (Erie Co.)			1		
Buffalo (Erie Co.)	14	11	12	12	4
Depew, village (Erie Co.)	1	2			1
East Aurora, village (Erie Co.)					1
Lackawanna (Erie Co.)		1	1		
Lancaster, village (Erie Co.)		1			
Tonawanda (Erie Co.)		2	3		
West Seneca, town (Erie Co.)		1			1
Rest of county	3	6	24	1	4
Brookport, village (Monroe Co.)		5	2		
Fairport, village (Monroe Co.)	1		3		
Rochester (Monroe Co.)	22	20	7	4	9
Rest of county	4	6	2	2	2
Lockport (Niagara Co.)	1	3	6	2	

Total Mortality for the Year 1909 in the Sanitary Districts
— (Continued) —

SANITARY DISTRICTS	Other diseases of the genito-urinary system	The puerperal state	Diseases of the skin	Diseases of the organs of locomotion	Malformations	Early infancy (under three months)	External causes	Ill-defined diseases	BIRTHS	
									Total births	Still births
D	4			1	2		5	1	54	5
Co.)	54	2	3	1		1	11	5	129	4
Co.)	5	2	2	1		4	13	2	23	1
Co.)	1				1	1	8	1	40	3
Co.)	1						4	4	71	1
	53	21	13	5	21	2	5	4	23	4
	16	3	4	1	6	12	129	22	2,654	123
	3	1	1				3	9	38	3
	4	2			2	3	9	6	137	4
	2						4	1	36	1
	14	2	0		2	4	24	25		
	2	1	1	1		3	4	4	65	1
	4	5	2	1	3	5	26	24		
Totals for the District	158	55	44	12	54	127	407	23		
WEST CENTRAL DISTRICT										
Auburn (Cayuga Co.)	10	7	5		7	7	21	18	615	36
	16	3	4	1	5	7	46	27	22	
	12	1	2	1		6	17	6	63	
	2						4	2		
Co.)	7	4	2		1	6	10	17	62	1
Co.)	5			1		1	2	1	44	3
Co.)	7	2	2	1	1	7	3	19	117	5
Co.)	5	1	3			2	9	6	275	8
	4	1			4	8	16	7	84	4
	3					1	6	3	79	5
	2	1	1		1		2	1		
Rest of	3	2	1		2	1	17	15	49	5
Hector,	1				2		5	1		
Co.)	7	2	1				16	11	124	0
	3		1		1		3	4	60	3
	1	1					4	6		
Co.)	3	1	1		1	1	19	11	201	8
Co.)	5	2			3	6	11	5		
Co.)	5	1	1		1	2	22	18	68	0
Co.)	3				2	1	3	2	70	0
Co.)	4		1		2	1	1	8		
Co.)	9	5	2		2	4	21	19	46	0
Co.)	4		1		3	1	1	7		
						2	15	12		
Totals for the District	120	34	35	4	39	67	320	226		
EASTERN DISTRICT										
	1	1	1			1	4	2	72	1
	135	115	2	6	46	67	378	195	9,627	423
	2					4	5	3	144	0
						1	1	2	51	0
	1				1	5	14	1	179	9
						1	4		24	2
	2				1	1	8	3	152	9
	8	2				12	25	6	298	5
	9	8	1	1	7	11	92	17		
	2	1			1		7	3	55	4
	1					2	2	5	47	0
	86	37	19	5	27	41	186	61	4,337	223
	19	3	11		5	16	43	29		
	5	3			3	9	28	16	314	24

Total Mortality for the Year 1909 in the Sanitary Districts
— (Concluded)

SANITARY DISTRICTS	Population, U. S. census estimate 1909	Total deaths	Ages		
			Deaths under 1 year	Deaths 1 to 4 years	Deaths 5 to 19 years
LAKE ONTARIO AND WESTERN DISTRICT (Continued)					
Niagara Falls (Niagara Co.)	32,012	465	127	35	26
North Tonawanda (Niagara Co.)	10,087	162	35	21	15
Rest of county.	31,451	441	61	23	19
Albion, village (Orleans Co.)	5,743	64	8	5	5
Medina, village (Orleans Co.)	5,134	98	10	5	9
Rest of county	21,066	287	41	5	10
Fulton (Oswego Co.)	11,754	147	22	11	10
Oswego (Oswego Co.)	22,728	326	73	16	6
Richland, town (Oswego Co.)	3,673	48	5	2	2
Rest of county	22,150	566	66	9	20
Clyde, village (Wayne Co.)	2,589	41	3	2	2
Lyons, village (Wayne Co.)	5,122	86	6	3	3
Newark, village (Wayne Co.)	4,534	81	7	2	5
Palmyra, town (Wayne Co.)	4,271	87	6	2	1
Rest of county...	32,035	523	68	28	29
Totals for the District	1,005,895	15,134	2,762	1,105	963
Totals for the State	8,699,642	140,261	26,077	12,211	7,662

Total Mortality for the Year 1909 in the Sanitary Districts
— (Concluded)

SANITARY DISTRICTS		EPIDEMIC DISEASES		
		Males		
LAKE ONTARIO AND WESTERN DISTRICT — (Continued)				
Niagara Falls (Niagara Co.)	21			
North Tonawanda (Niagara Co.)	6			
Rest of county	6			
Aldon, village (Orleans Co.)				
Medina, village (Orleans Co.)				
Rest of county	2		1	
Fulton (Oswego Co.)				
Oswego (Oswego Co.)	6			
Richland, town (Oswego Co.)				
Rest of county	6	1		
Clyde, village (Wayne Co.)				
Lyons, village (Wayne Co.)	2			
Sewark, village (Wayne Co.)				
Palmyra, town (Wayne Co.)				
Rest of county	6			
Total for the District	201	2		11
Total for the State	1,315	78	4	1,271

Total Mortality for the Year 1909 in the Sanitary Districts
— (Concluded)

SANITARY DISTRICTS	Pulmonary tuberculosis		Cancer	
LAKE ONTARIO AND WESTERN DISTRICT — (Continued)				
Niagara Falls (Niagara Co.)	34	10		
North Tonawanda (Niagara Co.)	8	10		
Rest of county	35	21		
Albion, village (Orleans Co.)	7	2	5	
Medina, village (Orleans Co.)	10	4	8	11
Rest of county	28	21	23	44
Fulton (Oswego Co.)	8	2	23	27
Oswego (Oswego Co.)	22	23	44	33
Richland, town (Oswego Co.)	3	4	9	7
Rest of county	25	25	77	91
Clyde, village (Wayne Co.)	5	3	4	11
Lyons, village (Wayne Co.)	1	11	2	10
Newark, village (Wayne Co.)	5	7	14	11
Palmyra, town (Wayne Co.)	3	4	6	15
Rest of county	24	24	77	63
Totals for the District	1 213	733	1,762	1,952
Totals for the State	13,906	7,000	11,191	13,784

Total Mortality for the Year 1909 in the Sanitary Districts
— (Concluded)

SANITARY DISTRICTS	Other diseases of the genito- urinary system		Ill-defined diseases	Deaths	
				Total births	Still births
LAKE ONTARIO AND WESTERN DISTRICT—(Continued)					
Niagara Falls (Niagara Co.)	7		13	846	35
North Tonawanda (Niagara Co.)	3		2	327	13
Rest of county	10		15		
Albion, village (Orleans Co.)	2		4	80	1
Medina, village (Orleans Co.)	2		1	92	7
Rest of county	6		21		
Fulton (Oswego Co.)	4		10	219	7
Oswego (Oswego Co.)	15		10	481	12
Richland, town (Oswego Co.)	1		2	62	3
Rest of county	12		21		
Clyde, village (Wayne Co.)	2		2	80	1
Lyons, village (Wayne Co.)	4		5	78	3
Newark, village (Wayne Co.)	1		3	96	10
Palmyra, town (Wayne Co.)	1		3	75	7
Rest of county	10		24		
Totals for the District	331		496		
Totals for the State	2 803	1	3,336	2 2,456	10,069

Total Mortality in Cities for the Year 1909

	Population, U. S. census estimate 1909	Total deaths	Annual death rate per 1000 population	Ages					
				Deaths under 1 year	Deaths 1 to 4 years	Deaths 5 to 19 years	Deaths 20 to 39 years	Deaths 40 to 59 years	Deaths at 60 years and over
<i>City of New York</i>	4,450,963	74,105	16.6	15,944	8,552	4,250	13,474	16,033	15,852
BOROUGH OF MANHATTAN.....	2,305,190	37,961	16.5	8,893	4,490	1,986	6,802	8,463	7,387
BOROUGH OF THE BRONX.....	328,400	6,426	19.6	987	561	444	1,604	1,494	1,336
BOROUGH OF BROOKLYN.....	1,505,925	24,365	16.2	4,925	2,957	1,471	4,218	5,645	5,749
BOROUGH OF QUEENS.....	233,709	3,838	16.4	843	405	276	603	791	918
BOROUGH OF RICHMOND.....	77,673	1,515	19.5	296	139	73	243	300	462
<i>Cities between 100,000 and 400,000</i> ..	819,436	12,750	15.5	2,322	936	828	2,072	2,715	3,798
Buffalo.....	296,535	6,111	15.4	1,253	550	478	980	1,224	1,616
Rochester.....	196,793	2,913	14.8	440	223	108	492	631	953
Syracuse.....	125,378	1,947	15.5	402	103	100	310	410	616
Albany.....	100,730	1,759	17.5	227	87	82	284	403	613
<i>Cities between 50,000 and 100,000</i> ..	291,937	4,611	15.8	1,006	392	247	779	939	1,273
Troy.....	77,242	1,487	19.3	212	81	67	248	357	522
Schenectady.....	73,037	846	11.6	214	80	53	150	102	187
Yonkers.....	72,206	1,125	15.6	301	148	70	198	189	218
Utica.....	69,458	1,153	16.6	279	83	57	163	205	346
<i>Cities between 20,000 and 50,000</i> ..	408,897	6,452	15.8	1,188	432	354	976	1,327	2,173
Binghamton.....	45,855	712	15.5	27	57	52	97	148	231
Elmira.....	35,705	546	15.3	53	26	28	71	141	227
Auburn.....	34,272	499	14.6	81	17	26	74	107	194
Niagara Falls.....	32,012	465	14.5	127	35	26	105	91	81
Jamestown.....	28,495	343	12.0	46	19	23	56	55	144
Watertown.....	28,140	423	15.0	79	19	26	62	86	151
Mt. Vernon.....	27,891	392	14.1	80	38	20	49	81	124
Newburgh.....	27,418	482	17.2	68	29	27	78	102	178
Kingston.....	26,110	519	19.9	70	24	40	84	110	185
Poughkeepsie.....	26,039	501	19.2	78	30	18	64	100	205
Amsterdam.....	25,267	423	16.7	109	23	17	80	75	118
New Rochelle.....	24,920	323	13.0	74	35	18	44	59	93
Cohoes.....	24,185	488	20.2	123	64	27	74	88	111
Oswego.....	22,528	336	14.9	73	16	6	38	72	131
<i>Cities between 10,000 and 20,000</i> ..	356,870	5,299	14.8	956	288	296	785	1,000	1,953
Rome.....	18,917	382	20.2	55	22	24	44	61	175
Gloversville.....	18,761	300	16.0	36	13	12	44	71	124
Lockport.....	18,105	276	15.2	34	9	27	39	57	109
Dunkirk.....	18,061	202	11.2	49	9	13	33	42	56
Middletown.....	16,610	256	15.4	32	13	11	48	46	106
Glens Falls.....	16,279	226	13.9	37	9	16	42	44	78
Ithaca.....	15,584	211	13.5	21	11	13	31	48	87
Peekskill, village.....	15,473	247	16.0	58	22	9	38	42	77
Corning.....	15,339	217	14.1	41	9	16	34	46	71
Ogdensburg.....	14,921	245	16.4	55	13	17	36	39	85
Watervliet.....	14,009	230	15.7	43	18	10	40	48	70
Hornell.....	14,126	185	13.1	16	3	9	31	49	77
Olean.....	18,000	211	11.7	39	13	15	36	30	78
Geneva.....	13,543	175	12.9	25	3	5	31	38	72
Saratoga Springs, village.....	13,471	249	18.5	23	5	12	48	61	100
Rensselaer.....	13,368	174	13.0	28	8	13	20	39	65
Cortland.....	12,538	162	12.9	29	2	5	22	24	70
Fulton.....	11,759	167	14.2	22	11	10	19	22	83
Little Falls.....	11,563	183	15.8	40	8	12	30	39	50
Plattsburg.....	11,450	199	17.4	48	19	7	32	35	57
Lackawanna.....	11,370	150	13.2	97	25	2	12	9	5
Hudson.....	11,032	172	15.6	34	8	8	23	38	61
North Tonawanda.....	10,987	162	14.7	55	21	15	11	28	32
Pittsford, village.....	10,961	179	16.3	30	8	11	29	32	69
Tonawanda.....	10,099	139	13.8	9	6	4	12	32	76

Total Mortality in Cities for the Year 1909 — (Continued)

<i>City of New York</i>			
BOROUGH OF MANHATTAN			
BOROUGH OF THE BRONX			
BOROUGH OF BROOKLYN			
BOROUGH OF QUEENS			
BOROUGH OF RICHMOND			
<i>Cities between 100,000 and 400,000</i>			
Buffalo			....
Rochester			
Syracuse			
Albany			
<i>Cities between 50,000 and 100,000</i>			
Troy			80
Schenectady			8
Yonkers			1
Utica			3
<i>Cities between 20,000 and 50,000</i>			
Binghamton			80
Elmira			3
Auburn			1
Niagara Falls			1
Jamestown			
Watertown			....
Mt. Vernon			1
Newburgh			1
Kingston			5
Poughkeepsie			1
Amsterdam			1
New Rochelle			2
Cohoes			4
Oswego			
<i>Cities between 10,000 and 20,000</i>			
Rome			17
Gloversville			2
Lockport			2
Dunkirk			
Middletown			2
Glens Falls			1
Ithaca			
Peekskill, village			
Corning	10		
Ogdensburg	4		2
Watervliet	1	1	
Hornell	3		1
Olean	2		1
Geneva	2		
Saratoga Springs, village	1		2
Rensselaer	4		
Cortland	3		
Fulton			
Little Falls	1		2
Plattsburg	3		1
Lockawanna			
Hudson	1		1
North Tonawanda	6		
Batavia, village	3		
Oneida			1

Total Mortality in Cities for the Year 1909 — (Continued)

	Other diseases of the genito-urinary system	The puerperal state	Diseases of the skin	Diseases of the organs of locomotion	Malformations	Early infancy (under three months)	External causes	Ill-defined diseases	Births		
									Total births	Annual birth rate per 1000 population	Still births
<i>City of New York</i>	1,252	715	237	203	648	2,252	4,799	1,180	122,367	27.5	6,808
BOROUGH OF MANHATTAN...	581	363	146	129	269	1,322	2,555	612	62,990	27.3	3,742
BOROUGH OF THE BRONX...	93	64	13	14	37	199	373	86	9,574	29.1	455
BOROUGH OF BROOKLYN...	486	230	62	57	317	593	1,460	302	41,997	27.6	2,202
BOROUGH OF QUEENS.....	61	43	8	1	22	102	304	112	6,317	27.0	358
BOROUGH OF RICHMOND...	31	15	8	2	3	36	107	68	1,992	25.6	81
<i>Cities between 100,000 and 400,000</i>	329	179	44	20	103	226	797	341	17,218	21.0	855
Buffalo.....	135	115	2	6	46	67	378	195	9,027	22.8	423
Rochester.....	66	37	19	5	27	41	186	64	4,292	21.8	216
Syracuse.....	53	21	13	5	21	47	129	32	2,661	21.2	124
Albany.....	75	6	10	4	9	71	104	50	1,238	12.3	92
<i>Cities between 50,000 and 100,000</i>	115	46	15	9	43	97	280	84	6,527	22.3	302
Troy.....	33	11	5	4	9	47	71	46	985	12.8	47
Schenectady.....	14	9	5	2	15	19	54	6	1,774	24.3	62
Yonkers.....	29	12	1	2	5	1	77	18	1,961	27.2	89
Utica.....	39	14	4	1	14	30	78	14	1,807	26.0	104
<i>Cities between 20,000 and 50,000</i>	170	56	36	11	55	149	456	146	8,609	21.3	344
Binghamton.....	29	8	5	2	4	22	59	17	933	20.3	40
Elmira.....	18	3	1	....	4	5	38	4	537	15.0	30
Auburn.....	10	7	5	....	7	7	27	18	615	17.9	36
Niagara Falls.....	7	4	1	2	5	12	53	13	664	20.7	36
Jamestown.....	6	2	1	1	4	5	21	9	575	20.0	22
Watertown.....	9	6	2	....	4	8	32	10	507	18.0	24
Mt. Vernon.....	8	3	1	1	4	8	26	13	798	28.7	30
Newburgh.....	17	7	3	....	5	11	29	9	469	17.1	20
Kingston.....	14	2	4	....	2	14	38	12	502	19.2	15
Poughkeepsie.....	8	1	3	2	3	16	34	11	542	20.8	12
Amsterdam.....	10	7	3	....	2	11	28	12	756	29.9	10
New Rochelle.....	10	2	1	....	3	10	23	5	727	29.2	31
Cohoes.....	9	2	4	2	5	14	27	3	503	20.8	25
Oswego.....	15	2	2	1	3	6	21	10	481	21.4	13
<i>Cities between 10,000 and 20,000</i>	158	56	26	7	43	143	426	148	6,797	19.3	262
Rome.....	8	4	5	1	1	6	29	12	480	25.4	14
Gloversville.....	12	2	2	....	3	4	25	3	388	20.7	19
Lockport.....	5	3	....	....	3	9	28	16	373	20.6	21
Dunkirk.....	3	4	....	1	2	8	21	4	535	29.6	18
Middletown.....	7	3	1	....	2	8	24	4	279	16.8	13
Glens Falls.....	6	1	....	....	2	12	18	7	242	14.9	10
Ithaca.....	5	2	1	....	3	6	11	5	289	18.5	7
Peekskill, village.....	1	5	1	....	4	6	13	3	303	19.6	16
Corning.....	5	5	1	1	2	7	17	9	253	16.5	13
Ogdensburg.....	6	3	....	1	4	7	12	10	355	23.8	9
Watervliet.....	10	....	2	....	....	5	9	2	195	13.3	9
Hornell.....	9	3	2	....	3	1	17	8	291	20.6	5
Olean.....	4	4	....	1	....	3	21	9	307	17.1	14
Geneva.....	4	1	....	....	4	8	16	7	254	18.8	8
Saratoga Springs, village.....	9	6	1	....	1	3	17	2	246	18.3	16
Rensselaer.....	2	....	....	....	1	6	17	2	181	13.5	6
Cortland.....	4	....	1	....	....	7	17	2	220	17.5	3
Fulton.....	4	2	2	....	....	4	10	10	219	18.6	7
Little Falls.....	6	1	1	....	....	6	23	7	323	27.8	6
Plattsburg.....	5	1	1	....	....	13	12	7	223	19.5	17
Lackawanna.....	1	....	....	....	1	5	14	1	171	15.0	....
Hudson.....	4	2	....	....	3	....	11	5	198	17.9	9
North Tonawanda.....	3	1	....	....	4	2	16	2	330	30.0	14
Batavia, village.....	12	1	2	1	....	6	17	6	227	20.7	14
Oneida.....	3	2	3	1	....	1	11	5	138	13.7	4

Total Mortality in Cities for the Year 1909 — (Continued)

Total Mortality in Cities for the Year 1909 — (Continued)

	EPIDEMIC DISEASES									
	Typhoid fever	Malarial diseases	Smallpox	Measles	Scarlatina	Whooping cough	Diphtheria and croup	Influenza	Erysipelas	Cerebro-spinal meningitis
<i>Cities under 10,000.. . . .</i>	11	.	.	1						
Port Jervis.	2	.	.	.						
Johnstown . . . . .	...	.	.	...		
Oneonta.....	7	...	.	1						
Townshanda	2	.	.	.						
TOTAL URBAN MORTALITY .	967	49	3	1,181	1,095	590	2,067	517	379	395
RURAL MORTALITY... . .	348	29	1	111	110	197	246	606	85	90

Cities under 10,000

Port Jervis . . .		
Johnstown	+	+
Oneonta	+	+
Tonawanda	-	-

TOTAL URBAN MORTALITY

RURAL MORTALITY

Total Mortality in Cities for the Year 1909 — (Continued)

Total Mortality in Cities for the Year 1909 — (Continued)

24

Total Mortality in Cities for the Year 1909 — (Concluded)

1

2,877

698

*Summary of Mortality in the Sanitary Districts for the Year
1909 — (Continued)*

DISTRICT	Pul- monary tuber- culosis	Cancer	Other general diseases	Diseases of the nervous system	Diseases of the circula- tory system	Pneu- monia	Other diseases of the respira- tory system	Diarrhea and enteritis (under 2 years)	Other diseases of the digestive system	Bright's disease
Maritime.....	9,252	3,841	6,044	3,771	10,871	5,667	8,020	5,598	4,369	5,410
Hudson Valley.....	118	657	869	1,541	1,622	800	617	427	906	954
Adirondack....	556	341	507	801	785	446	348	245	477	362
Mohawk Valley.....	585	397	601	877	883	469	373	357	498	554
Southern Tier.....	362	412	582	919	1,023	415	377	152	557	496
East Central....	512	383	581	825	909	460	288	234	474	468
West Central....	335	296	410	695	679	274	256	128	374	347
Lake Ontario and Western	1,213	733	1,319	1,762	1,952	832	1,127	732	1,106	802
Total.....	13,996	7,060	10,913	11,191	18,784	9,423	11,406	7,873	8,791	9,393
City deaths...	11,167	5,023	8,135	6,187	13,812	7,062	9,388	6,726	6,153	6,743
Rural deaths..	2,829	2,037	2,778	5,004	4,972	2,361	2,018	1,147	2,638	2,650

*Summary of Mortality in the Sanitary Districts for the Year
1909 -- (Concluded)*

DISTRICTS	Other diseases of the genito- urinary system	The puer- peral state	Diseases of the skin	Diseases of the organs of loco- motion	Malform- ations	Early infancy (under 3 months)	External causes	Ill- defined diseases
Maritime.....	1,392	770	271	211	702	2,355	5,295	1,316
Hudson Valley.....	310	85	71	15	94	313	863	319
Adirondack.....	115	59	49	5	66	166	336	253
Mohawk Valley.....	176	69	52	11	75	150	433	220
Southern Tier.....	201	63	59	13	48	115	467	276
East Central.....	158	55	44	12	58	127	407	230
West Central.....	120	34	35	4	39	67	320	226
Lake Ontario and Western.....	331	198	68	19	118	246	1,111	496
Total.....	2,803	1,333	649	290	1,200	3,539	9,232	3,336
City deaths.....	2,016	1,056	365	250	899	2,877	6,704	1,920
Rural deaths.....	787	277	284	40	301	662	2,438	1,416

Record of each reporting local board of health, showing total deaths, etc.— (Continued)

(Cities are printed in small caps, villages in italics and towns in Roman type.)

NAME OF PLACE	Pop- u- lation	Deaths	Births
CATTARAUGUS CO..	4		
Orlean	1		1
Allegany			
Ashford			
Carrollton			
Cold Spring			
Conswango			
Dayton			
East Otto			
Elko			
Ellicottville		1	
Farmersville			
Franklinville			
Freedom			
Great Valley			
Hinsdale			
Humphrey			
Ischua			
Leon			
Little Valley			
Lyndon			
Machias			
Mansfield			
Napoli			
New Albion			
Orlean			
Otto			
Perrysburg			
Parma			
Portville			
Randolph			
Red House			
Salamanca			
Salamanca			
South Valley			
Yorkshire			
CAYUGA COUNTY	4		
Auburn	3		
Aurelius			
Brutus			
Cato			
Conquest			
Fleming			
Genoa			
Ira			
Ledyard		54	
Locke			
Mentz			
Montezuma			
Moravia			
Niles			
Owasco			
Scipio			
Sempronius			
Sennett			
Springport			
Sterling			
Summer Hill			
Throop			
Venice			
Victory			
CHAUTAUQUA CO..	8		
Dunkirk	1		
Jamestown	2		
Arkwright			

*Record of each reporting local board of health, showing total
deaths, etc.— (Continued)*

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NAME OF PLACE	Popula- tion, State census, 1905	All deaths	Cerebro-spinal meningitis	Typhoid fever	Malarial diseases	Scarlet fever	Measles	Whooping cough	Diphtheria	Diarrhea	Consumption	Influenza	Cancer
DELAWARE COUNTY													
—(Continued)													
Hancock	5,701	63	1					1	1	3	5		5
Harpersfield	1,244	9									1		
Kortright	1,527	24		1				2			1		
Masonville	1,120	19								1	1		
Meredith	1,469	17										1	4
Middletown	3,819	66				1				1	2	1	1
Roxbury	2,206	34		1							2		3
Sidney	4,319	68		2		1		2		1	1	3	7
Stamford	2,049	35		1						1	3		3
Tompkins	2,277	26	1						2		3	1	
Walton	4,996	70				1		1		5	3	3	5
DUTCHESS COUNTY													
POUGHKEEPSIE	81,633	1,346	2	10		3	10	13	16	55	95	8	76
Amenia	25,379	501	1	6		2	2	7	5	20	34	2	38
Beekman	2,152	40	1						1	1	3	1	4
Clinton	933	13							1				
Dover	1,275	8											
Dover	1,992	26		1				1			2		
East Fishkill	2,088	31							1	1	1		
Fishkill	13,183	51					3	1		6	2		1
Fishkill Landing	4,045	60					1			4	3		2
Hyde Park	2,944	41							2	1	3		6
La Grange	1,271	21									2		3
Matteawan	5,584	98		2				3	1	4	6		5
Milan	926	11									1		
North East	2,063	25				1	2			1	1	1	1
Pawling	1,940	32									4		2
Pine Plains	1,215	17											
Pleasant Valley	1,426	20								1	3		1
Poughkeepsie	5,390	62		1					1	6	5	1	1
Red Hook	3,874	59					1		1	2	7	2	3
Rhinebeck	3,610	52								2	4	1	2
Stanford	1,641	19								2	1		1
Union Vale	976	14					1						1
Wappinger	752	13							1		1		
Wappingers Falls	3,589	70							2	2	9		3
Washington	3,013	62						1		2	3		2
ERIE COUNTY													
BUFFALO	473,700	7,502	11	110		183	78	18	115	355	627	49	329
TONAWANDA	376,587	6,111	4	96		168	77	14	102	240	523	12	271
Alden	7,904	105		2					2	3	9	3	6
Amherst	2,453	39						1		2	1	1	2
Aurora	4,493	47		2						1	2	1	7
Boston	4,180	25							1		3		1
Brant	1,627	31					1	1		2	2		1
Brant	1,998	37		2		2			1		2	2	3
Cheektowaga	6,671	101		1						12	6	1	3
Clarence	2,817	35		1		1			2	4		4	1
Colden	1,307	20		1						1			1
Collins	2,602	33	1			1					1		4
Concord	4,452	55								1	6	3	1
Depew	3,597	57	1	1		2		1	2	7	4		
East Aurora	2,480	37	1							1	3		1
East Hamburg	2,575	35						1		1		2	2
Eden	2,495	29								3	1		1
Elma	2,155	23		1							1		
Evans	2,867	33	1							1	4	1	2
Grand Island	972	6											1
Hamburg	5,879	85	1			1			1	2	4	3	3
Holland	1,451	17									1		2
LACKAWANNA	11,370	150				3			1	48	22	1	1
Lancaster	8,958	17		1						1	2		
Lancaster	3,893	39		1		2			1	5	6		
Marilla	1,513	19									2	2	

*Record of each reporting local board of health, showing total
deaths, etc.— (Continued)*

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*Record of each reporting local board of health, showing total
deaths, etc.— (Continued)*

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman type.]

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Record of each reporting local board of health, showing total deaths, etc.— (Continued)

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman type.]

NAME OF

NASSAU COU

Hempstead.
North Hemp.
Oyster Bay
Rockville Cn
Freeport.

NEW YORK.

Bor. of Man.
Bor. of Broc
Bor. of Broc
Bor. of Quee
Bor. of Rich

NIAGARA CO

LOCKPORT
NIAGARA FA
Cambria...
Hartland.
Lewiston
Lockport
Newfane...
Niagara.
Pendleton..
Porter...
Royalton
Somerset
Wheatfield.
N. Tonawa
Wilson...

ONEIDA CO

Utica...
Rome...
Annsville
Augusta...
Ava...
Boonville..
Bridgewater
Camden...
Deerfield
Florence
Floyd...
Forestport
Kirkland
Lee...
Macy...
Marshall.
New Hartford
Paris...
Rome...
Rome...
Sangerfield.
Steuben...
Trenton...
Vernon...
Verona...
Vienna...
Western...
Westmoreland
Whitestown

ONONDAGA

STRACON...
Camillus...
Cicero...

*Record of each reporting local board of health, showing total
deaths, etc.— (Continued)*

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman type.]

*Record of each reporting local board of health, showing total
deaths, etc.— (Continued)*

[Cities are printed in SMALL CAPS, villages in *italics* and towns in Roman type.]

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*Record of each reporting local board of health, showing total
deaths, etc.— (Continued)*

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman type.]

*Record of each reporting local board of health, showing total
deaths, etc.— (Continued)*

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman type.]

NAME OF PLACE

SUFFOLK COUNTY.

Amherst.....
Babylon.....
Bellevue.....
Brookhaven.....
East Hampton... ..
Greenport.....
Huntington.....
Islip.....
Patchogue.....
Riverhead.....
Shelter Island.. ..
Smithtown.....
Southampton.....
Sag Harbor.....
Southold.....

SULLIVAN COUNTY

Bathel.....
Callicoon.....
Cochecton.....
Delaware.....
Fallsburg.....
Forestburg.....
Framont.....
Highland.....
Liberty.....
Lumberland... ..
Mamakating... ..
Neversink.....
Rockland.....
Thompson.....
Tusten.....

TIOGA COUNTY. . .

Waverle.....
Barton.....
Berkshire.....
Candor.....
Newark Valley.. ..
Nichols.....
Owego.....
Owego.....
Richford.....
Spencer.....
Tioga.....

TOMPKINS COUNTY

ITHACA.....
Caroline.....
Danby.....
Dryden.....
Enfield.....
Groton.....
Ithaca.....
Lansing.....
Newfield.....
Ulysses.....

ULSTER COUNTY

Knoxton.....
Denning.....
Esopus.....
Gardiner.....
Hardenburg...

*Record of each reporting local board of health, showing total
deaths, etc.—(Concluded)*

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman type.]

Deaths by Causes 1885 to Date

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro-spinal meningitis	Typhoid fever	Malarial diseases
1885.....	80,407	14.3	30,027	446	1,067	944
1886.....	86,801	15.2	32,928	572	1,169	899
1887.....	108,269	18.6	35,114	540	1,327	935
1888.....	114,584	19.3	38,345	490	1,483	813
1889.....	113,155	18.6	40,243	402	1,550	746
1890.....	128,648	20.8	37,392	474	1,612	738
1891.....	129,850	20.5	42,740	589	1,926	619
1892.....	131,388	20.3	42,434	649	1,664	613
1893.....	129,659	19.7	41,643	875	1,685	493
1894.....	123,423	18.6	41,472	489	1,640	422
1895.....	128,834	19.1	42,002	546	1,716	409
1896.....	126,253	18.4	40,136	510	1,542	449
1897.....	118,525	17.1	35,771	538	1,351	350
1898.....	122,584	17.4	37,113	695	1,810	404
1899.....	121,831	17.0	35,386	702	1,604	248
1900.....	132,352	18.2	39,204	531	1,948	309
1901.....	131,461	17.7	35,775	492	1,741	283
1902.....	124,657	16.4	31,215	456	1,318	189
1903.....	127,602	16.4	32,768	454	1,665	137
1904.....	142,014	17.8	39,086	1,708	1,652	149
1905.....	137,222	17.0	38,045	2,566	1,554	106
1906.....	140,773	17.1	39,292	1,178	1,568	139
1907.....	147,890	17.6	40,168	230	1,673	136
1908.....	138,912	16.3	37,941	539	1,375	84
1909.....	140,261	16.1	38,278	485	1,315	78

Deaths by Causes 1885 to Date — (Continued)

Deaths by Causes 1885 to Date — (Continued)

YEAR	OTHER CAUSES OF DEATH				
	Con- sumption	Acute respiratory diseases	Puerperal	Digestive	Urinary
1885.....	11,238	10,864	974	4,343	4,069
1886.....	11,947	11,389	884	5,066	4,305
1887.....	11,609	11,557	885	5,599	4,582
1888.....	12,383	13,756	1,069	6,146	4,926
1889.....	12,390	13,833	979	6,501	5,732
1890.....	13,831	18,053	928	7,696	5,688
1891.....	13,445	20,647	1,053	8,486	6,473
1892.....	13,471	20,432	1,131	8,920	6,502
1893.....	13,123	19,807	1,054	8,834	6,955
1894.....	12,824	15,885	911	8,745	6,946
1895.....	13,267	17,725	939	8,892	7,449
1896.....	13,265	16,820	972	8,955	7,770
1897.....	12,641	16,277	1,013	8,963	7,866
1898.....	12,979	16,350	920	10,101	8,641
1899.....	13,412	17,938	877	10,163	9,064
1900.....	13,590	19,232	1,136	10,644	9,501
1901.....	13,766	17,589	1,068	7,478	9,558
1902.....	12,582	16,986	1,034	7,235	9,604
1903.....	13,194	17,339	1,110	7,282	9,998
1904.....	14,159	21,132	1,272	7,866	10,815
1905.....	14,061	17,832	1,377	8,158	10,697
1906.....	14,027	20,178	1,326	8,741	11,344
1907.....	14,431	22,663	1,413	9,035	12,163
1908.....	14,347	18,477	1,335	8,398	11,329
1909.....	13,996	20,829	1,333	8,791	12,196

Deaths by Causes 1885 to Date — (Concluded)

YEAR	OTHER CAUSES OF DEATH — (Concluded)					
	Circula- tory	Nervous	Cancer	Violence	Old age	Unclass- ified
1885.....	4,069	8,651	1,887	2,994	4,889	7,728
1886.....	5,238	8,799	2,050	3,296	5,990	8,981
1887.....	5,737	9,957	2,363	3,780	8,676	9,736
1888.....	6,394	11,174	2,497	3,842	7,994	11,310
1889.....	6,886	11,266	2,638	3,834	5,980	12,615
1890.....	7,306	11,593	2,868	4,542	5,484	18,728
1891.....	8,480	13,166	3,028	5,028	6,530	15,371
1892.....	9,013	14,009	3,152	5,543	6,385	14,647
1893.....	9,042	13,826	3,232	5,295	5,826	14,622
1894.....	8,451	12,948	3,305	5,487	5,497	15,310
1895.....	9,966	11,724	3,554	5,889	5,569	16,380
1896.....	10,486	11,925	3,789	7,022	5,377	14,835
1897.....	10,905	12,124	4,131	6,172	5,516	14,950
1898.....	10,511	13,312	4,385	6,520	5,524	14,641
1899.....	10,606	13,177	4,533	6,093	6,068	15,324
1900.....	10,676	12,993	4,871	6,714	5,402	16,134
1901.....	11,949	13,366	5,033	7,926	5,439	17,388
1902.....	12,889	12,964	4,990	7,058	4,949	15,833
1903.....	13,561	12,966	5,456	7,646	4,765	17,466
1904.....	14,309	14,142	5,697	8,822	5,120	19,858
1905.....	14,547	13,569	6,056	8,352	4,923	19,025
1906.....	15,395	13,521	6,168	8,874	4,332	18,944
1907.....	16,952	14,539	6,420	9,668	2,723	20,717
1908.....	17,233	11,989	6,554	9,183	2,516	20,181
1909.....	18,784	11,191	7,060	9,232	2,189	18,860

BIRTHS AND INFANT MORTALITY. NEW YORK STATE.

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— TOTAL BIRTHS.

NEW YORK STATE DEPARTMENT OF HEALTH.

Infant Mortality

The following table shows the mortality among children under five and infants under one year of age, and also relation to total deaths at all ages and in their relation to the total births.

* Until 1904, deaths under one year were not classified separately.

† Mortality one to five years.

		<i>Mortality under one year</i>			
1908....	Rural.	4,685	1909 ..	.... Rural....	4,692
	Urban.	21,876		Urban....	21,485

Mortality in the Sanitary Districts 1885-1909 — Maritime District

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro-spinal meningitis	Typhoid fever	Malarial diseases
1885	55,021	...	22,436	233	488	718
1886	57,420	...	24,668	246	483	687
1887	61,715	...	25,289	232	528	658
1888	64,421	...	27,513	201	558	519
1889	65,037	...	27,691	243	638	468
1890	67,512	...	26,781	170	625	444
1891	74,681	...	30,620	311	659	381
1892	74,590	...	30,905	364	634	412
1893	75,027	...	29,561	652	657	337
1894	71,055	...	29,826	254	561	306
1895	74,246	21.2	30,303	335	566	281
1896	75,789	21.5	29,122	291	594	333
1897	67,648	18.9	25,804	332	535	285
1898	71,196	20.0	26,908	401	724	296
1899	70,384	18.4	25,751	414	578	185
1900	75,989	19.5	27,625	310	760	240
1901	78,030	20.0	25,649	257	775	222
1902	73,326	18.6	25,494	264	609	138
1903	73,011	18.0	22,926	271	697	100
1904	84,164	20.0	28,445	1,432	726	111
1905	79,671	18.2	26,173	2,142	714	67
1906	82,544	18.2	27,427	846	689	85
1907	86,155	18.4	27,644	26	808	89
1908	79,768	17.1	25,808	369	615	49
1909	80,981	16.6	26,262	347	612	46

Mortality in the Sanitary Districts 1885-1909 — Maritime District — (Continued)

YEAR	EPIDEMIC DISEASES — (Continued)	
	Small-pox	
1885	28	
1886	37	
1887	171	
1888	153	
1889	...	
1890	2	
1891	1	
1892	142	
1893	252	
1894	281	
1895	11	
1896	3	
1897	27	
1898	1	
1899	■	
1900	11	
1901	426	
1902	322	
1903	7	
1904	9	
1905	9	
1906	6	
1907	9	
1908	1	
1909	3	

Mortality in the Sanitary Districts 1885-1909 — Maritime District — (Continued)

YEAR	OTHER CAUSES OF DEATH				
	Con- sumption	Acute respiratory diseases	Puerperal	Digestive	Urinary
1885.....	7,896	8,036	648	2,813	3,095
1886.....	8,069	8,269	557	3,034	3,241
1887.....	7,546	8,517	560	3,457	3,480
1888.....	7,996	9,654	650	3,643	3,589
1889.....	8,014	9,619	599	3,866	3,491
1890.....	8,621	7,504	586	4,379	3,886
1891.....	8,373	13,638	666	4,737	4,334
1892.....	8,250	12,771	716	5,105	4,260
1893.....	8,359	13,472	600	5,099	4,583
1894.....	7,796	10,414	521	5,266	4,416
1895.....	8,319	11,683	513	5,463	4,755
1896.....	8,314	11,328	591	5,374	4,920
1897.....	7,204	9,768	536	5,221	4,938
1898.....	8,191	10,677	533	6,314	5,368
1899.....	8,546	11,264	529	6,309	5,813
1900.....	8,650	13,240	744	6,804	6,115
1901.....	8,730	11,010	656	3,270	6,171
1902.....	8,080	11,798	662	3,242	6,141
1903.....	8,582	11,620	688	3,113	6,255
1904.....	9,124	14,665	848	3,471	6,926
1905.....	9,906	11,946	875	3,812	6,616
1906.....	9,540	13,694	824	4,324	7,093
1907.....	9,590	14,981	837	4,421	6,892
1908.....	9,517	12,063	761	4,106	6,190
1909.....	9,252	13,687	770	4,369	6,802

Mortality in the Sanitary Districts 1885-1909 — Maritime District — (Continued)

YEAR	OTHER CAUSES OF DEATH — (Concluded)					
	Circula- tory	Nervous	Cancer	Violence	Old age	Unclassi- fied
1885.....	2,863	5,252	1,087	1,989	2,909	5,056
1886.....	2,941	5,329	1,171	2,094	3,076	6,138
1887.....	3,197	6,102	1,317	2,289	3,437	6,652
1888.....	3,486	6,729	1,349	2,126	2,177	7,646
1889.....	3,653	6,665	1,358	2,157	1,491	8,897
1890.....	3,872	6,691	1,543	2,507	1,518	10,468
1891.....	4,368	7,123	1,522	2,900	1,569	10,791
1892.....	4,469	7,463	1,609	3,225	1,620	10,043
1893.....	4,609	7,558	1,614	3,030	1,543	10,218
1894.....	4,189	6,851	1,655	3,282	1,442	10,701
1895.....	5,413	5,580	1,805	3,784	1,371	11,764
1896.....	5,586	5,570	1,894	4,684	1,459	10,522
1897.....	5,455	5,435	2,031	3,672	1,322	10,813
1898.....	5,020	6,370	2,174	3,901	1,417	10,298
1899.....	4,788	6,255	2,302	3,639	1,594	10,281
1900.....	4,931	6,049	2,449	4,150	1,456	11,112
1901.....	5,888	6,241	2,651	4,996	1,455	11,832
1902.....	6,438	5,970	2,557	4,074	1,307	10,666
1903.....	6,445	5,775	2,828	4,405	1,025	11,614
1904.....	6,882	6,631	2,967	5,514	1,187	12,775
1905.....	7,159	6,331	3,151	4,812	984	12,153
1906.....	7,789	6,162	3,288	5,214	1,084	11,356
1907.....	9,491	6,756	3,514	5,729	766	11,407
1908.....	9,938	4,731	3,564	5,504	746	10,412
1909.....	10,871	3,771	3,841	5,295	*	11,282

* Included with unclassified causes.

Mortality in the Sanitary Districts 1885-1909 — Hudson Valley District

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro-spinal meningitis	Typhoid fever	Malarial diseases
1885.....	8,941	.....	2,688	86	249	95
1886.....	9,639	.....	2,991	145	263	64
1887.....	9,895	.....	2,864	135	270	79
1888.....	11,015	.....	3,248	93	355	80
1889.....	11,106	.....	3,222	58	257	96
1890.....	10,893	.....	2,713	67	222	87
1891.....	12,209	.....	3,092	71	372	85
1892.....	13,147	.....	5,411	79	248	60
1893.....	12,174	.....	3,074	70	288	65
1894.....	11,733	.....	2,966	69	264	54
1895.....	12,148	18.7	3,217	70	402	49
1896.....	12,316	19.0	2,975	52	314	50
1897.....	11,822	17.7	2,625	52	247	36
1898.....	11,776	17.6	2,574	92	332	49
1899.....	11,854	17.0	2,499	84	318	31
1900.....	12,432	17.4	2,870	55	350	27
1901.....	11,926	17.5	2,309	43	238	32
1902.....	11,070	16.0	2,150	35	251	25
1903.....	11,619	16.7	2,175	34	178	19
1904.....	12,461	18.0	2,450	73	246	14
1905.....	12,408	17.6	2,542	126	206	11
1906.....	12,026	17.0	2,384	108	184	26
1907.....	12,925	18.2	2,551	44	194	22
1908.....	12,283	17.2	2,450	37	155	21
1909.....	12,322	16.9	2,401	39	146	13

Mortality in the Sanitary Districts 1885-1909 — Hudson Valley District — (Continued)

YEAR	EPIDEMIC DISEASES — (Continued)						
	Small-pox	Scarlet fever	Measles	Erysipelas	Whooping cough	Diphtheria	Diarrhea
1885.....	3	63	109	25	48	580	560
1886.....	1	70	70	32	141	597	612
1887.....	4	109	49	25	41	579	706
1888.....	7	231	48	23	85	708	740
1889.....	.....	324	108	18	68	722	681
1890.....	1	48	6	26	159	363	443
1891.....	.....	94	84	24	102	378	720
1892.....	.....	299	113	50	46	741	783
1893.....	.....	213	41	27	86	507	690
1894.....	20	161	28	19	142	367	741
1895.....	.....	84	96	34	110	340	767
1896.....	.....	31	125	45	68	329	891
1897.....	.....	11	32	23	50	327	610
1898.....	.....	25	17	19	105	212	714
1899.....	1	26	53	30	75	231	625
1900.....	.....	41	134	36	120	259	843
1901.....	6	79	56	25	49	234	471
1902.....	14	50	20	14	88	175	467
1903.....	1	86	35	30	104	186	384
1904.....	.....	35	94	22	58	163	451
1905.....	.....	44	119	23	93	149	537
1906.....	.....	17	56	27	76	162	422
1907.....	.....	36	52	26	80	225	525
1908.....	1	62	39	26	53	154	530
1909.....	1	36	50	17	85	105	427

Mortality in the Sanitary Districts 1885-1909 — Adirondack
and Northern District

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro- spinal menin- gitis	Typhoid fever	Malarial diseases
1885.....	2,428	.....	626	20	47	12
1886.....	2,479	.....	616	25	51	5
1887.....	2,969	.....	710	36	71	11
1888.....	3,435	.....	823	36	63	10
1889.....	3,129	.....	735	13	72	15
1890.....	3,825	.....	795	19	51	12
1891.....	4,131	.....	888	23	81	18
1892.....	4,534	.....	924	34	89	13
1893.....	4,367	.....	881	13	89	9
1894.....	4,435	.....	890	29	100	4
1895.....	4,263	13.0	904	18	108	4
1896.....	4,447	13.0	862	29	77	.....
1897.....	5,257	14.5	1,011	23	96	6
1898.....	5,187	14.7	984	27	122	5
1899.....	5,332	14.0	994	37	139	4
1900.....	5,430	14.2	1,083	36	152	5
1901.....	5,611	14.0	1,155	31	97	3
1902.....	4,981	13.0	937	30	99	5
1903.....	5,305	13.4	927	26	112	3
1904.....	5,728	14.5	1,056	27	128	.....
1905.....	5,996	15.0	1,266	31	109	3
1906.....	6,161	15.1	1,251	31	115	6
1907.....	6,302	15.2	1,254	17	108	6
1908.....	6,042	14.6	1,216	17	78	1
1909.....	6,256	15.0	1,315	15	80	3

Mortality in the Sanitary Districts 1885-1909 — Adirondack
and Northern District — (Continued)

YEAR	EPIDEMIC DISEASES — (Continued)						
	Small- pox	Scarlet fever	Measles	Erysip- elas	Whoop- ing cough	Diph- theria	Diar- rhea
1885.....	1	19	11	11	28	175	113
1886.....	.....	19	18	9	40	110	144
1887.....	.....	28	16	19	20	147	189
1888.....	3	39	30	8	8	160	208
1889.....	.....	9	16	6	34	106	194
1890.....	.....	12	25	10	32	145	166
1891.....	.....	23	10	12	12	141	286
1892.....	.....	23	50	15	23	133	208
1893.....	.....	43	14	11	41	177	186
1894.....	.....	25	6	18	31	123	255
1895.....	.....	29	2	9	22	79	226
1896.....	.....	24	41	15	16	121	237
1897.....	.....	6	27	11	28	132	240
1898.....	.....	3	30	9	43	59	307
1899.....	.....	19	2	10	44	54	270
1900.....	.....	23	48	25	24	74	393
1901.....	4	35	83	22	36	93	229
1902.....	9	28	25	14	24	46	167
1903.....	2	22	14	18	18	57	204
1904.....	1	29	3	15	32	65	131
1905.....	.....	11	67	11	68	42	258
1906.....	.....	12	19	22	36	67	209
1907.....	.....	12	12	15	31	67	224
1908.....	.....	10	7	18	17	53	271
1909.....	.....	8	29	18	54	32	245

Mortality in the Sanitary Districts 1885-1909 — Mohawk Valley District

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro-spinal meningitis	Typhoid fever	Malarial diseases
1885	3,174	.....	647	32	62	19
1886	3,559	.....	946	54	78	22
1887	4,359	.....	1,089	33	89	14
1888	4,594	.....	1,106	19	101	19
1889	4,643	.....	1,152	32	99	17
1890	5,178	.....	1,151	32	159	32
1891	5,978	.....	1,310	25	166	23
1892	6,356	.....	1,278	28	178	23
1893	5,497	.....	1,231	19	118	16
1894	5,375	.....	1,286	19	112	13
1895	5,358	15.3	1,133	24	106	7
1896	5,714	16.4	1,300	35	135	6
1897	5,611	16.0	1,025	20	96	5
1898	5,883	15.5	1,185	40	128	3
1899	6,087	15.5	1,060	32	90	3
1900	6,164	15.5	1,375	26	139	5
1901	6,455	16.0	1,195	28	110	4
1902	6,089	15.0	1,252	26	84	1
1903	6,534	15.1	1,358	28	101	1
1904	6,846	16.0	1,389	41	85	.....
1905	6,768	15.4	1,396	73	82	4
1906	7,230	16.3	1,631	43	88	4
1907	7,626	16.6	1,698	19	79	2
1908	7,524	16.3	1,784	25	79	2
1909	7,116	15.2	1,557	25	63	5

Mortality in the Sanitary Districts 1885-1909 — Mohawk Valley District — (Continued)

YEAR	EPIDEMIC DISEASES — (Continued)						
	Small-pox	Scarlet fever	Measles	Erysipelas	Whooping cough	Diphtheria	Diar-rhea
1885	.....	19	36	20	12	142	183
1886	.....	38	.....	13	29	131	192
1887	.....	32	25	8	21	294	321
1888	.....	18	22	9	20	301	283
1889	1	30	26	11	28	249	305
1890	.....	41	21	9	20	273	292
1891	.....	62	26	13	30	188	315
1892	.....	90	33	17	30	290	264
1893	.....	67	22	16	25	209	293
1894	1	64	1	16	38	151	350
1895	.....	25	1	16	36	60	297
1896	.....	23	109	22	49	86	388
1897	.....	13	25	11	21	109	244
1898	.....	10	24	12	30	89	382
1899	1	13	3	12	52	114	256
1900	2	18	67	15	50	132	405
1901	4	25	49	25	37	142	264
1902	2	77	16	11	10	121	264
1903	2	60	17	18	79	97	280
1904	.....	78	16	15	36	108	268
1905	.....	38	34	16	24	67	276
1906	1	50	10	25	54	106	322
1907	.....	36	34	27	46	80	357
1908	1	55	16	25	53	73	396
1909	.....	47	12	21	33	53	357

Mortality in the Sanitary Districts 1885-1909 — Southern Tier District

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro-spinal meningitis	Typhoid fever	Malarial diseases
1885.....	1,741	.....	404	10	41	21
1886.....	1,852	.....	442	10	49	25
1887.....	2,513	.....	580	19	76	33
1888.....	3,276	.....	700	23	93	42
1889.....	3,390	.....	684	20	115	24
1890.....	3,854	.....	786	23	91	22
1891.....	4,648	.....	839	22	132	10
1892.....	4,934	.....	880	24	107	7
1893.....	4,838	.....	940	28	105	8
1894.....	4,862	.....	993	27	126	12
1895.....	4,780	12.0	930	15	118	13
1896.....	4,754	13.0	678	18	152	9
1897.....	5,523	14.0	811	8	75	11
1898.....	5,462	14.0	891	16	112	18
1899.....	5,930	14.0	860	30	121	3
1900.....	5,918	14.0	1,003	21	141	10
1901.....	5,982	14.0	951	21	107	8
1902.....	5,811	14.0	987	19	101	6
1903.....	5,966	13.9	943	17	111	5
1904.....	6,792	15.5	1,032	19	93	7
1905.....	6,425	14.5	1,003	27	77	3
1906.....	6,443	14.7	1,137	25	124	7
1907.....	6,909	15.6	1,101	22	90	9
1908.....	6,959	15.6	1,159	22	90	2
1909.....	6,977	15.5	1,065	18	101	6

Mortality in the Sanitary Districts 1885-1909 — Southern Tier District — (Continued)

YEAR	EPIDEMIC DISEASES — (Continued)						
	Small-pox	Scarlet fever	Measles	Erysipelas	Whooping cough	Diphtheria	Diarrhea
1885.....	20	18	14	14	48	97
1886.....	10	5	13	10	76	111
1887.....	24	6	11	8	111	178
1888.....	34	32	9	13	112	177
1889.....	1	34	10	7	22	117	196
1890.....	30	35	8	58	136	207
1891.....	1	34	32	7	12	195	248
1892.....	46	14	13	25	248	207
1893.....	68	51	17	19	294	241
1894.....	2	32	6	15	55	192	281
1895.....	7	13	18	33	99	242
1896.....	11	14	12	10	74	239
1897.....	13	27	16	51	91	204
1898.....	15	36	11	35	72	327
1899.....	28	11	6	39	75	225
1900.....	28	34	14	42	115	323
1901.....	19	33	19	67	80	170
1902.....	6	30	29	23	20	121	198
1903.....	29	13	14	60	75	178
1904.....	1	59	58	22	21	103	152
1905.....	18	9	29	36	71	184
1906.....	9	4	16	52	61	241
1907.....	22	28	13	23	88	174
1908.....	14	17	12	53	63	235
1909.....	22	20	25	27	71	152

Mortality in the Sanitary Districts 1885-1909 — Southern Tier District — (Continued)

YEAR	OTHER CAUSES OF DEATH				
	Con- sumption	Acute respiratory diseases	Puerperal	Digestive	Urinary
1885.....	199	195	31	132	51
1886.....	187	180	27	141	58
1887.....	236	233	31	175	57
1888.....	330	384	31	229	117
1889.....	300	361	35	254	128
1890.....	345	539	42	292	131
1891.....	412	651	36	377	177
1892.....	438	743	50	391	229
1893.....	372	584	52	376	239
1894.....	394	547	53	427	241
1895.....	413	606	36	370	274
1896.....	411	501	37	438	291
1897.....	390	624	66	452	339
1898.....	401	548	45	444	366
1899.....	485	699	45	506	374
1900.....	452	648	52	448	414
1901.....	441	716	35	499	423
1902.....	431	574	49	510	407
1903.....	378	569	53	496	387
1904.....	459	720	54	570	477
1905.....	431	675	50	544	441
1906.....	395	647	49	508	501
1907.....	400	822	68	547	657
1908.....	419	765	54	585	696
1909.....	362	792	63	587	697

Mortality in the Sanitary Districts 1885-1909 — Southern Tier District — (Concluded)

YEAR	OTHER CAUSES OF DEATH — (Concluded)					
	Circula- tory	Nervous	Cancer	Violence	Old age	Unclassi- fied
1885.....	145	253	68	86	135	163
1886.....	151	233	83	86	207	190
1887.....	169	292	74	140	415	225
1888.....	230	317	112	166	530	277
1889.....	282	416	120	147	436	355
1890.....	323	451	139	239	444	299
1891.....	415	566	151	233	549	378
1892.....	484	565	172	251	548	372
1893.....	472	594	164	250	513	391
1894.....	452	586	191	235	500	485
1895.....	485	574	182	251	559	452
1896.....	543	618	217	275	503	391
1897.....	623	694	260	332	533	427
1898.....	643	780	253	332	546	462
1899.....	737	792	280	295	631	548
1900.....	683	794	287	308	544	560
1901.....	673	838	261	368	550	654
1902.....	787	830	259	350	512	549
1903.....	902	784	309	385	509	692
1904.....	939	906	338	446	550	798
1905.....	905	844	342	439	521	779
1906.....	935	874	331	383	430	851
1907.....	944	939	349	438	227	1,049
1908.....	931	916	388	437	223	1,037
1909.....	1,023	919	412	467	*	1,213

* Included with unclassified causes.

Mortality in the Sanitary Districts 1885-1909 — East Central District

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro-spinal meningitis	Typhoid fever	Malarial diseases
1885.....	2,444	.....	537	26	48	21
1886.....	2,947	.....	610	20	81	19
1887.....	3,465	.....	765	12	71	40
1888.....	4,222	.....	949	22	121	37
1889.....	4,290	.....	921	23	103	39
1890.....	4,918	.....	973	24	91	25
1891.....	5,113	.....	1,066	28	135	24
1892.....	5,467	.....	1,054	29	78	25
1893.....	5,493	.....	1,114	21	100	17
1894.....	5,224	.....	1,060	22	116	10
1895.....	5,422	15.5	1,087	24	107	17
1896.....	5,371	15.4	1,070	27	96	12
1897.....	5,758	16.0	1,042	30	70	8
1898.....	5,745	16.0	1,019	15	123	14
1899.....	5,687	14.0	788	22	107	5
1900.....	5,796	14.0	1,028	22	110	10
1901.....	5,801	14.5	894	21	104	4
1902.....	5,481	14.0	852	20	72	1
1903.....	5,781	14.3	878	12	70	1
1904.....	6,422	16.0	961	30	80	2
1905.....	6,464	15.5	1,082	48	70	9
1906.....	6,371	15.4	1,124	23	59	1
1907.....	6,689	15.9	1,085	16	79	2
1908.....	6,879	16.3	1,185	17	72	5
1909.....	6,619	15.5	1,134	9	68	.....

Mortality in the Sanitary Districts 1885-1909 — East Central District — (Continued)

YEAR	EPIDEMIC DISEASES — (Continued)						
	Small-pox	Scarlet fever	Measles	Erysipelas	Whooping cough	Diphtheria	Diarrhea
1885.....	1	10	14	11	8	80	146
1886.....	1	8	5	26	8	119	151
1887.....	.....	17	17	12	28	106	196
1888.....	1	39	53	13	16	182	307
1889.....	15	52	16	11	21	145	346
1890.....	.....	24	36	4	34	112	281
1891.....	.....	25	19	14	17	89	350
1892.....	1	26	14	27	22	172	254
1893.....	.....	26	71	17	34	257	264
1894.....	1	23	1	17	28	160	334
1895.....	.....	33	4	15	25	71	292
1896.....	.....	40	17	11	15	111	336
1897.....	.....	21	62	12	39	126	222
1898.....	.....	22	35	13	21	91	309
1899.....	.....	14	5	13	38	47	195
1900.....	.....	19	47	22	38	61	395
1901.....	2	27	75	14	29	64	181
1902.....	.....	9	10	13	30	44	182
1903.....	.....	14	30	10	50	50	160
1904.....	.....	38	24	20	10	59	135
1905.....	.....	57	24	20	17	36	207
1906.....	.....	26	19	10	56	44	229
1907.....	.....	20	6	16	9	64	249
1908.....	.....	12	28	13	32	46	284
1909.....	.....	29	4	17	58	43	234

Mortality in the Sanitary Districts 1885-1909 — West Central District

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro-spinal, meningitis	Typhoid fever	Malarial diseases
1885.....	1,812	.....	306	15	45	24
1886.....	2,056	.....	383	14	42	22
1887.....	2,474	.....	457	8	47	24
1888.....	2,950	.....	412	24	51	20
1889.....	2,918	.....	459	14	58	24
1890.....	3,660	.....	602	15	64	17
1891.....	4,040	.....	519	18	72	11
1892.....	4,349	.....	556	20	61	18
1893.....	3,865	.....	600	12	61	14
1894.....	3,868	.....	562	17	65	16
1895.....	4,019	13.4	573	13	82	13
1896.....	4,086	13.0	638	9	54	20
1897.....	4,351	14.5	560	21	45	14
1898.....	4,243	14.3	610	9	39	11
1899.....	4,565	14.0	568	25	50	8
1900.....	4,461	14.0	654	13	91	5
1901.....	4,577	14.3	624	10	60	6
1902.....	4,448	14.0	593	12	50	8
1903.....	4,822	15.0	608	6	116	5
1904.....	4,970	15.5	620	13	65	6
1905.....	5,073	16.0	712	18	57	4
1906.....	4,917	15.6	722	18	62	4
1907.....	5,209	16.6	691	20	45	3
1908.....	4,849	15.3	672	17	62	3
1909.....	4,856	15.2	656	2	44	3

Mortality in the Sanitary Districts 1885-1909 — West Central District — (Continued)

YEAR	EPIDEMIC DISEASES — (Continued)						
	Small-pox	Scarlet fever	Measles	Erysipelas	Whooping cough	Diphtheria	Diarrhea
1885.....	.....	3	3	12	7	41	90
1886.....	.....	5	1	6	15	42	112
1887.....	.....	.....	4	12	11	76	144
1888.....	2	27	11	8	2	69	112
1889.....	4	23	4	7	11	79	136
1890.....	1	24	55	9	28	60	163
1891.....	2	30	10	11	15	36	153
1892.....	.....	23	8	19	22	84	124
1893.....	.....	32	14	12	19	167	146
1894.....	1	23	3	12	12	62	158
1895.....	.....	8	5	14	18	56	179
1896.....	.....	21	20	11	20	39	217
1897.....	.....	9	14	14	18	59	187
1898.....	.....	7	10	7	23	24	219
1899.....	.....	21	9	9	7	60	159
1900.....	.....	15	24	6	27	70	253
1901.....	.....	10	29	12	46	28	128
1902.....	6	5	3	15	23	33	156
1903.....	.....	6	15	20	16	40	128
1904.....	.....	7	13	22	7	48	130
1905.....	.....	9	22	12	28	37	175
1906.....	.....	9	13	7	23	27	179
1907.....	.....	15	12	20	27	47	118
1908.....	.....	11	9	11	15	35	147
1909.....	.....	11	5	16	20	25	128

Mortality in the Sanitary Districts 1885-1909 — Lake Ontario
and Western District

YEAR	All deaths	Death rate	Deaths under five years of age	EPIDEMIC DISEASES		
				Cerebro- spinal menin- gitis	Typhoid fever	Malarial diseases
1885.....	4,745	.....	1,258	24	99	31
1886.....	7,448	.....	2,629	70	133	63
1887.....	9,065	.....	3,370	65	175	70
1888.....	10,530	.....	3,887	72	243	86
1889.....	9,726	.....	3,397	81	208	63
1890.....	11,120	.....	3,860	107	250	89
1891.....	12,988	.....	4,270	91	306	67
1892.....	11,820	.....	4,331	71	269	55
1893.....	12,649	.....	4,242	60	267	27
1894.....	11,721	.....	3,941	50	295	16
1895.....	11,519	15.5	3,534	47	227	24
1896.....	11,193	15.0	3,367	49	188	19
1897.....	11,368	15.3	3,021	51	187	15
1898.....	11,446	15.4	2,842	92	224	18
1899.....	11,981	13.7	2,867	58	201	9
1900.....	12,278	14.0	3,240	48	205	7
1901.....	12,875	15.0	2,983	81	250	4
1902.....	12,292	14.0	2,930	50	252	5
1903.....	13,498	15.0	3,120	60	280	3
1904.....	13,921	15.5	3,171	73	229	9
1905.....	14,254	15.2	3,844	101	239	5
1906.....	14,649	15.5	3,614	124	247	6
1907.....	15,627	16.0	4,072	61	265	3
1908.....	14,638	15.0	3,667	35	224	1
1909.....	15,134	15.0	3,888	30	200	2

Mortality in the Sanitary Districts 1885-1909 — Lake Ontario
and Western District — (Continued)

YEAR	EPIDEMIC DISEASES — (Continued)						
	Small- pox	Scarlet fever	Measles	Erysip- elas	Whoop- ing cough	Diph- theria	Diar- rhea
1885.....	.....	53	31	31	22	235	285
1886.....	.....	74	6	36	41	434	598
1887.....	.....	124	100	23	35	528	1,018
1888.....	46	123	69	32	30	538	1,047
1889.....	9	68	19	24	126	348	840
1890.....	.....	64	109	29	43	363	844
1891.....	.....	126	79	35	54	556	961
1892.....	.....	171	25	58	112	675	923
1893.....	.....	238	38	39	74	499	1,238
1894.....	2	115	26	33	114	472	1,217
1895.....	.....	38	123	26	72	454	1,041
1896.....	.....	43	53	22	86	437	1,055
1897.....	.....	44	66	24	110	390	865
1898.....	.....	27	7	16	97	179	956
1899.....	1	59	73	32	66	197	845
1900.....	1	66	116	23	103	202	1,055
1901.....	3	57	65	38	123	238	780
1902.....	83	48	89	31	67	208	694
1903.....	29	82	77	39	108	318	681
1904.....	2	71	46	49	35	306	740
1905.....	.....	65	161	35	127	242	722
1906.....	.....	54	64	32	90	253	841
1907.....	1	65	108	51	122	187	712
1908.....	.....	139	52	55	74	190	762
1909.....	.....	227	119	28	67	177	732

(Continued)

*Mortality in the Sanitary Districts 1885-1909 — Lake Ontario
and Western District — (Continued)*

YEAR	OTHER CAUSES OF DEATH				
	Con- sumption	Acute respiratory diseases	Puerperal	Digestive	Urinary
1885.....	617	460	73	280	189
1886.....	937	707	55	441	226
1887.....	950	750	52	540	267
1888.....	1,091	1,033	116	687	320
1889.....	1,016	1,029	107	670	341
1890.....	1,180	1,623	80	889	389
1891.....	1,347	1,989	119	1,000	560
1892.....	1,281	1,839	91	986	505
1893.....	1,179	1,510	121	1,017	542
1894.....	1,204	1,324	90	769	521
1895.....	1,209	1,552	113	758	583
1896.....	1,133	1,355	105	742	680
1897.....	1,075	1,482	122	792	693
1898.....	1,038	1,394	103	814	749
1899.....	1,114	1,623	93	837	773
1900.....	1,129	1,408	111	841	824
1901.....	1,155	1,579	116	967	765
1902.....	1,030	1,301	101	913	805
1903.....	1,078	1,454	126	1,046	873
1904.....	1,175	1,596	118	1,041	842
1905.....	1,152	1,475	180	954	974
1906.....	1,086	1,611	182	1,067	1,027
1907.....	1,145	1,923	200	1,259	1,149
1908.....	1,137	1,549	187	917	1,012
1909.....	1,213	1,959	198	1,106	1,133

*Mortality in the Sanitary Districts 1885-1909 — Lake Ontario
and Western District — (Concluded)*

YEAR	OTHER CAUSES OF DEATH — (Concluded)					
	Circula- tory	Nervous	Cancer	Violence	Old age	Unclassi- fied
1885.....	337	658	177	198	390	555
1886.....	448	1,047	204	304	579	1,005
1887.....	479	1,249	259	389	975	1,017
1888.....	666	1,397	275	528	848	1,283
1889.....	688	1,285	307	503	778	1,336
1890.....	696	1,417	313	564	653	1,419
1891.....	868	1,598	392	596	816	1,634
1892.....	905	1,618	333	630	824	1,449
1893.....	982	1,688	303	649	823	1,265
1894.....	959	1,565	425	595	785	1,144
1895.....	1,014	1,487	414	547	788	1,001
1896.....	1,078	1,465	459	569	762	893
1897.....	1,116	1,509	495	615	835	882
1898.....	1,173	1,549	530	634	830	1,017
1899.....	1,231	1,553	548	600	870	1,198
1900.....	1,274	1,588	569	663	859	1,186
1901.....	1,337	1,618	665	820	814	1,400
1902.....	1,412	1,670	624	807	787	1,315
1903.....	1,595	1,797	678	893	809	1,472
1904.....	1,681	1,756	713	839	853	1,747
1905.....	1,720	1,672	768	943	871	1,848
1906.....	1,800	1,695	763	1,087	692	1,928
1907.....	1,759	1,744	717	1,113	561	2,482
1908.....	1,610	1,457	746	924	477	3,090
1909.....	1,952	1,762	733	1,111	*	2,385

* Included with unclassified causes.

Mortality from Pulmonary Tuberculosis

The following table shows the total deaths in the State, annual death rate per 1,000 population; reported mortality from tuberculosis, and deaths per 100,000 population, due to tuberculosis since 1885; also percentage of deaths due to tuberculosis.

YEAR	
1885.....	
1886.....	
1887.....	
1888.....	
1889.....	
1890.....	
1891.....	
1892.....	
1893.....	
1894.....	
1895.....	
1896.....	
1897.....	
1898.....	
1899.....	
1900.....	
1901.....	
1902.....	
1903.....	
1904.....	
1905.....	
1906.....	
1907.....	
1908.....	
1909.....	

Mortality from Pulmonary Tuberculosis

In the entire State there were 13,996 deaths from tuberculosis of the respiratory organs during 1909, a moderate decrease from the number in the five years preceding. The mortalities of the State for quinquennial periods since 1885 have been:

	Yearly average	Percentage of all death
1885-89.....	11,913	12.6
1890-94.....	13,339	11.0
1895-99.....	13,313	10.9
1900-04.....	13,458	10.4
1905-09.....	14,557	10.1

in 1907 it amounted to 9,000 deaths, in 1908 it decreased to 8,867, and in 1909 to 8,645; for two years there has been an actual as well as a very considerable relative decrease in the number of deaths from pulmonary tuberculosis. This is less true of most of the smaller cities, but is to a degree true as to a good number of them as is seen by a reference to the table.

In the rural part of the State, while the rate of tuberculosis mortality increased in 1908 to 123.0 per 100,000 population from 112.7 in 1907, it is in 1909 reduced to 119.0, the actual mortality for the three years being 2,913 in 1907, 2,906 in 1908, and 2,783 in 1909.

The mortality from pulmonary tuberculosis in the cities has been:

	Cities	Rest of State
1901-05 (yearly average)	10,646	2,906
1906	11,340	2,687
1907	11,471	2,960
1908	11,324	2,992
1909	11,067	2,881

The sanitary districts give an instructive record, taking into account the civil condition of each of them. All of them show a lower rate of mortality except the Lake Ontario and Western. The Southern Tier district, not only for the series of years presented in the table, but as a uniform fact, has the lowest tuberculosis mortality in the State.

The following table shows the mortality from Pulmonary Tuberculosis in the cities of the State grouped in order of population

CITIES	1901-1905		1906			1907		
	Deaths per 100,000 population from tuberculosis	Percentage of total deaths from tuberculosis	Total deaths from tuberculosis	Deaths per 100,000 population from tuberculosis	Percentage of total deaths from tuberculosis	Total deaths from tuberculosis	Deaths per 100,000 population from tuberculosis	Percentage of total deaths from tuberculosis
New York.....	215.8	11.6	8,976	218.2	11.8	8,996	212.0	11.4
Buffalo.....	132.0	8.7	496	129.9	7.7	496	128.5	8.1
<i>Cities 100,000 to 200 000 population:</i>								
Rochester.....	138.2	9.5	251	135.2	8.8	239	126.5	8.1
Syracuse.....	135.2	9.4	138	116.2	7.5	148	122.3	7.7
Albany.....	228.0	12.6	203	206.1	11.5	177	177.0	9.8
<i>Cities 50,000 to 100,000 population:</i>								
Troy.....	276.5	13.6	207	270.6	13.4	214	275.8	13.2
Schenectady.....	141.7	9.3	72	116.3	7.9	81	117.4	7.9
Yonkers.....	188.2	11.6	103	160.9	9.4	85	126.9	8.0
Utica.....	174.7	9.6	85	130.8	6.9	122	186.3	9.7
<i>Cities 20,000 to 50,000 population:</i>								
Binghamton.....	139.0	8.1	53	121.3	8.1	44	100.5	6.5
Elmira.....	134.0	8.7	47	131.7	9.1	46	128.9	8.2
Auburn.....	143.3	9.1	52	158.1	9.5	41	124.6	7.7
Niagara Falls.....	99.8	6.2	20	71.9	4.6	26	89.7	4.9
Jamestown.....	93.0	9.0	22	82.7	8.0	19	70.4	6.1
Newburgh.....	261.4	11.9	51	192.5	9.7	65	240.7	12.3
Watertown.....	95.6	6.4	23	88.8	5.0	34	126.4	6.7
Mount Vernon.....	115.1	8.1	26	101.6	6.5	30	113.2	7.5
Kingston.....	209.0	11.0	47	184.3	9.9	48	185.3	10.0
Poughkeepsie.....	174.2	8.8	34	136.0	7.7	29	112.0	5.5
Amsterdam.....	149.5	9.5	31	129.2	7.4	26	104.0	6.2
Cohoes.....	220.8	11.3	56	233.3	11.9	61	254.2	12.0
New Rochelle.....	94.9	7.0	25	116.3	7.3	15	66.1	4.4
Oswego.....	150.0	9.4	39	177.3	10.3	27	118.9	7.5
<i>Cities 15,000 to 20,000 population:</i>								
Gloversville.....	107.9	7.8	20	107.5	7.2	12	63.8	3.9
Rome.....	171.7	10.0	13	73.4	4.3	33	186.4	9.7
Lockport.....	135.8	8.7	16	91.4	6.6	22	122.9	8.0
Dunkirk.....	81.4	5.1	16	100.6	6.3	20	119.8	7.5
Middletown.....	202.5	10.0	17	106.9	7.1	25	157.2	10.4
Ithaca.....	129.7	8.4	10	68.0	4.7	19	126.7	7.7
<i>Cities 10,000 to 15,000 population:</i>								
Ogdensburg.....	331.7	12.5	21	141.9	7.8	20	135.1	7.6
Watervliet.....	177.6	10.6	25	172.4	10.1	26	176.9	10.2
Corning.....	119.7	8.2	11	79.1	5.9	10	71.4	3.7
Hornell.....	116.3	8.0	16	123.1	8.5	13	100.0	7.1
Geneva.....	83.7	5.9	13	104.0	6.4	16	124.0	8.9
Cortland.....	73.6	6.0	10	87.0	6.6	11	91.7	7.1
Rensselaer.....	148.6	8.6	10	93.4	6.2	12	100.0	7.0
Little Falls.....	105.3	9.2	14	127.3	9.2	17	154.5	9.4
Plattsburg.....	171.0	11.3	6	60.0	4.6	13	120.4	9.4
Hudson.....	184.3	9.7	14	133.3	6.9	21	200.0	10.6
North Tonawanda.....	92.6	7.6	6	60.0	4.3	8	76.2	5.8
Olean.....	54.9	4.8	7	70.0	5.0	9	90.0	6.5
<i>Cities below 10,000 population:</i>								
Port Jervis.....	173.4	10.0	9	92.8	5.1	11	111.1	6.3
Johnstown.....	104.9	7.9	13	135.4	10.9	12	122.5	8.1
Fulton.....	121.3	8.3	1	11.4	.73	7	77.8	6.0
Oneida.....	126.2	8.9	6	71.4	4.6	11	126.4	8.6
Tonawanda.....	117.1	8.7	9	113.9	10.8	7	87.5	6.4

Mortality from Tuberculosis — Greater New York

YEAR

1899	.....
1900	.....	770
1901	.....
1902	.....
1903	.....	4
1904	.....
1905	.....
1906	.....
1907	.....
1908	.....
1909	.....

Mortality from Tuberculosis — Rest of the State

770

The following table shows the city and rural mortality from Pulmonary Tuberculosis and death rate and percentage of deaths due to tuberculosis — (Continued)

77,673	1,815	19.5	159	204.7	10.4
50,406	872	13.9	44	87.3	6.6
90,813	1,455	16.2	108	118.9	7.4
14,921	245	16.4	17	114.0	7.0
75,892	1,210	15.8	91	117.2	7.4
63,910	948	14.8	72	112.7	7.0
82,918	988	11.9	98	118.2	10.0
73,037	846	11.6	86	117.7	10.2
9,881	142	14.3	12	121.5	8.5
25,294	397	15.6	22	87.1	5.8
15,122	207	13.7	9	69.5	4.3
25,515	531	20.9	57	225.1	10.7
21,814	1,454	17.8	74	90.4	5.1
15,339	217	14.1	12	78.0	5.5
14,126	185	13.1	12	86.0	6.5
52,349	1,052	19.6	60	91.7	4.6
84,909	1,705	20.1	164	193.2	9.6
36,783	688	17.1	158	429.6	25.2
26,907	453	16.8	16	69.5	3.6
34,507	499	14.5	54	99.1	6.9
15,584	211	13.5	13	83.4	6.1
18,723	288	15.3	21	112.1	7.3
26,660	1,520	19.6	138	159.2	9.1
26,110	519	19.9	62	237.1	11.9
60,550	1,520	16.4	76	125.1	7.1

The following table shows the city and rural mortality from Pulmonary Tuberculosis and death rate and percentage of deaths due to tuberculosis — (Concluded)

CITIES	Population	All deaths	Death rate	Deaths from tuberculosis	Deaths per 100,000 population	Percentage of all deaths due to tuberculosis
<i>Warren county</i>	33,527	503	15.0	43	128.3	8.5
Glens Falls.....	16,279	226	13.9	24	147.4	10.6
Rest of county.....	17,248	277	15.7	19	104.3	6.6
<i>Washington county</i>	48,776	742	15.2	39	180.8	5.2
<i>Wayne county</i>	48,564	791	16.3	38	78.2	4.8
<i>Westchester county</i>	264,702	4,057	15.3	369	135.6	8.9
Mt. Vernon.....	27,891	392	14.1	29	104.0	7.4
New Rochelle.....	24,920	323	13.0	23	92.2	7.1
Yonkers.....	72,200	1,125	15.6	107	148.2	9.5
Rest of county.....	139,691	2,217	15.4	200	129.0	8.3
<i>Wyoming county</i>	32,107	419	13.1	13	40.6	3.1
<i>Yates county</i>	19,408	267	13.8	17	87.6	6.4
Total.....	8,699,643	140,261	16.1	13,996	160.3	10.0

Mortality from Tuberculosis in the Counties

The following table shows the annual death rate in each of the counties for 1909, and the number of deaths per 100,000 population from tuberculosis. The counties are arranged in order of death rate from tuberculosis from highest to lowest. The excessive death rate from tuberculosis in Sullivan and Franklin counties is due to the large number of patients sent there from other parts of the State.

COUNTY	Population	All deaths	Deaths per 1,000 population	Deaths from tuberculosis	Rate per 100,000 population, 1909
Sullivan.....	36,788	628	17.1	158	429.6
Franklin.....	50,336	793	15.8	165	327.8
Seneca.....	25,315	530	20.9	57	225.1
Richmond.....	77,673	1,515	19.5	159	204.7
New York*.....	2,633,656	44,387	16.9	5,829	200.8
Putnam.....	14,473	269	18.6	29	200.4
Dutchess.....	81,633	1,616	19.8	160	196.0
Suffolk.....	84,909	1,705	20.1	164	193.2
Rensselaer.....	134,537	2,208	16.4	252	187.3
Greene.....	31,130	518	16.6	55	176.7
Livingston.....	36,450	595	16.3	61	167.4
New York State.....	8,699,643	140,261	16.1	13,996	160.9
Albany.....	176,237	2,962	16.4	283	160.6
Ulster.....	86,660	1,520	16.5	138	159.2
Kings.....	1,505,925	24,365	16.2	2,348	155.9
Onelida.....	144,573	2,555	17.7	221	152.8
Orange.....	111,791	1,909	17.1	165	147.6
Clinton.....	47,282	654	13.8	69	145.9
Essex.....	33,848	519	15.3	48	141.8
Montgomery.....	51,848	783	15.1	73	140.8
Orleans.....	32,247	449	13.9	45	139.5
Westchester.....	264,702	4,057	15.3	359	135.6
Monroe.....	256,698	3,873	15.1	340	132.4
Columbia.....	42,868	648	15.1	55	128.3
Warren.....	33,527	503	15.0	43	128.3
Erie.....	505,708	7,560	15.0	632	125.0
Chemung.....	51,600	856	16.6	64	124.0
Broome.....	74,786	1,363	18.2	89	119.0
St. Lawrence.....	90,813	1,455	16.2	108	118.9
Schenectady.....	82,918	988	11.9	98	118.2
Onondaga.....	186,205	2,934	15.8	212	113.9
Fulton.....	42,330	674	15.9	48	113.1
Saratoga.....	63,910	948	14.8	72	112.7
Niagara.....	92,568	1,344	14.5	100	108.0
Nassau.....	80,892	1,114	13.8	84	103.8
Queens.....	233,709	3,838	16.4	309	103.2
Cayuga.....	65,309	1,052	16.1	66	101.1
Tompkins.....	34,307	499	14.5	34	99.1
Genesee.....	36,930	535	14.5	36	97.5
Steuben.....	81,814	1,454	17.8	74	90.4
Herkimer.....	56,100	771	13.7	51	90.9
Yates.....	19,408	267	13.8	17	87.6
Jefferson.....	83,427	1,177	14.1	73	87.5
Rockland.....	50,406	672	13.3	44	87.3
Schoharie.....	25,294	397	15.5	22	87.0
Oswego.....	70,110	1,117	15.9	58	82.7
Washington.....	48,776	742	15.2	39	80.8
Wayne.....	48,564	791	16.3	38	78.2
Ontario.....	55,153	752	13.6	42	76.2
Delaware.....	47,088	642	13.6	35	74.3
Chenango.....	36,955	643	17.4	27	73.1
Madison.....	39,690	626	15.8	29	73.1
Otsego.....	48,209	733	15.2	32	66.4
Cortland.....	31,043	413	13.3	19	61.2
Chautauqua.....	103,532	1,382	13.3	62	59.9

*Includes the Bronx.

Deaths from Cancer per 100,000 population in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	62	66	65	61	71	72	72	75	75	79
Hudson Valley.....	68	67	72	77	78	78	82	80	86	80
Adirondack and Northern.....	60	53	58	60	64	75	68	66	64	81
Mohawk Valley.....	74	65	67	66	73	76	69	76	72	85
Southern Tier.....	65	63	60	72	78	78	75	80	87	91
East Central.....	79	74	76	79	80	80	82	80	83	90
West Central.....	71	71	78	86	80	90	87	91	93	92
Lake Ontario and Western.....	65	75	71	75	78	81	80	73	75	73
Entire State.....	66.9	67.6	65.7	70.3	71.9	74.9	74.8	75.9	77.0	81.1

In each 1,000 Deaths there were from Cancer in the —

DISTRICTS	Decade 1885-1894	Decade 1895-1904	1905	1906	1907	1908	1909
Maritime.....	21.6	31.8	39.4	30.9	40.7	44.6	47.4
Hudson Valley.....	25.8	37.6	44.2	48.1	44.1	49.5	53.3
Adirondack and Northern.....	32.0	42.0	48.0	45.1	43.1	43.8	54.5
Mohawk Valley.....	34.2	42.5	48.8	42.8	46.1	44.6	55.8
Southern Tier.....	35.5	46.5	53.5	51.3	50.5	55.7	59.1
East Central.....	36.4	51.8	52.0	53.8	50.3	51.2	57.8
West Central.....	37.5	49.5	57.2	56.1	55.2	60.8	60.5
Lake Ontario and Western.....	30.2	46.5	54.0	52.1	45.8	50.9	48.4
Entire State.....	25.0	37.0	44.2	43.9	43.4	47.3	50.3

During the past three years there were reported 18,994 deaths from cancer in this State, 7,634 (or 40.0 per cent.) being due to cancer of the stomach and liver, as will be seen from the following:

SEAT OF DISEASE	1907	1908	1909
Cancer of mouth.....	206	169	267
Cancer of stomach and liver.....	2,396	2,561	2,677
Cancer of intestines and peritoneum.....	812	849	926
Cancer of skin.....	201	200	202
Cancer of breast.....	617	599	665
Cancer of female genital organs.....	946	1,043	1,146
Cancer of other or unspecified organs.....	1,222	1,113	1,177
Total.....	5,400	6,534	7,060

Deaths in City of New York from Cancer during the year 1909

CANCER, ETC., OF THE MOUTH

1909

1909

CANCER OF STOMACH, LIVER

White . . .
 Chinese.....
 Black.....
 Native.....
 Foreign.....
 Unknown.....
 Single.....
 Married.....
 Widowed and
 Unknown.....

CANCER OF INTESTINES, RECTUM

White
 Chinese.....
 Black.....
 Native.....
 Foreign.....
 Unknown.....
 Single.....
 Married.....
 Widowed and
 Unknown.....

CANCER OF FEMALE GENITAL ORGANS

White
 Black
 Native.....
 Foreign.....
 Unknown.....
 Single.....
 Married.....
 Widowed and divorce'd
 Unknown.....

.
 .
 .
 .
 .
 .
 .
 .
 .
 .

CANCER OF THE BREAST

White	314	4	310	.	.
Black	4	.	4	.	.
Native.....	152	.	.	.	.
Foreign.....	156	.	.	.	.
Unknown.....	.	.	.	.	.
Single.....	59	.	.	.	.
Married.....	154	.	.	.	.
Widowed and divorce'd	104	.	.	.	.
Unknown.....	1	.	.	.	.

Deaths in City of New York from Cancer during the year
1909 — (Continued)

CANCER OF THE SKIN

1909

1909

1909

CANCER OF OTHER ORGANS AND UNSPECIFIED

White... ..
Black.....
Native.....
Foreign.....
Unknown.....
Single.....
Married.....
Widowed and divorce'd
Unknown... ..

CANCER, ETC., OF THE MOUTH

CANCER OF STOMACH, LIVER			
White.....			
Chinese.....			
Black.....			
Native.....			
Foreign.....			
Unknown.....			
Single.....			
Married.....			
Widowed and forced.....			
Unknown.....			
<hr/>			
CANCER OF INTESTINES, RECTUM			
White.....			
Chinese.....			
Black.....			
Native.....			
Foreign.....			
Unknown.....			
Single.....			
Married.....			
Widowed and forced.....			
Unknown.....			
<hr/>			
CANCER OF FEMALE GENITAL ORGANS			
White.....			
Black.....			
Native.....			
Foreign.....			
Unknown.....			
Single.....			
Married.....			
Widowed and forced.....			
Unknown.....			
<hr/>			
CANCER OF THE BREAST			
White.....			
Black.....			
Native.....			
Foreign.....			
Unknown.....			
Single.....			
Married.....			
Widowed and forced.....			
Unknown.....			

Deaths in Buffalo from Cancer during the year 1909 — (Conc'd)

ORGAN OR PART OF BODY AFFECTED

MALE		FEMALE	
Rectum.....	3	Peritoneum.....	1
Intestines.....	10	Intestines.....	15
Liver.....	16	Liver.....	20
Throat.....	1	Stomach.....	29
All organs.....	3	Gall bladder.....	1
Pancreas.....	1	Breast.....	22
Tongue.....	5	Hepatic.....	2
Face.....	5	Adrenals.....	1
Stomach.....	41	Pelvic.....	5
Esophagus.....	7	Liver and pancreas.....	1
Mouth.....	1	Liver and stomach.....	1
Penis and inguinal.....	1	Spinal cord.....	1
Pancreas and stomach.....	1	Uterus and bladder.....	2
Hyoid.....	1	Neck, lung and muscles, right side..	1
Thorax.....	2	Bladder.....	1
Larynx and throat.....	1	Spine.....	1
Cheek.....	1	Pancreas.....	1
Prostrate gland.....	5	Lungs.....	2
Sigmoid flexure.....	1	Right axilla.....	1
Penis.....	1	All organs.....	6
Kidney.....	1	Right groin.....	1
Spleen.....	1	Rectum.....	7
Rectum and sigmoid.....	1	Face and scalp.....	1
Jaw.....	2	Thorax.....	1
Neck and face.....	2	Stomach and rectum.....	1
Bladder.....	1	Uterus and rectum.....	2
Liver, stomach and pancreas.....	1	Urethra.....	1
Thyroid.....	1	Stomach and breast.....	2
Gall, bladder and rectum.....	1	Sigmoid.....	5
Mediastinum.....	1	Esophagus.....	2
Larynx and pharynx.....	1	Clitoris and labia.....	1
Neck.....	2	Thyroid gland.....	1
Stomach and liver.....	1	Uterus.....	37
Inferior maxilla.....	1	Uterus and pelvic.....	1
Lower lip and jaw.....	1	Neck.....	1
Thigh.....	1	Uterus and bladder.....	1
Liver, pancreas and omentum.....	1	Face.....	4
Larynx.....	1	Nose and forehead.....	1
Abdominal wall.....	1	Kidney.....	2
		Mouth.....	1
		Stomach and intestines.....	1
		Pyloric.....	1
Total.....	129	Total.....	189

Deaths from Cancer during 1909 for rest of State — (Continued)

Deaths from Cancer during 1909 for rest of State — (Concluded)

* Remarks: Age unknown, 3; nativity unknown, 20; other nationalities: 1, Japan; 2, Nova Scotia; 2, Newfoundland; 1, Prussia; 1, Bavaria; 1, Roumania.
† 3 Indian.

Occupations — (Continued)

Gardener, 10.	Milk condenser, 1.
Gasfitter, 1.	Miller, 1.
Glover, 5.	Millhand, 3.
Grocer, 9.	Milliner, 4.
Hardware, 1.	Millwright, 1.
Harnessmaker, 1.	Miner, 2.
Hatter, 6.	Molder, 8.
Horseshoe puncher, 1.	Musician, 7.
Hostler, 2.	Music teacher, 1.
Hotelkeeper, 10.	Navigation, 3.
Inspector street railway, 1.	Nickel plater, 2.
Insurance agent, 12.	Nurse, 14.
Ironworker, 6.	Oilman, 1.
Janitor, 7.	Oil operator, 2.
Jeweler, 2.	Oil producer, 1.
Knee staker, 1.	Onion raiser, 1.
Laborer, 158.	Optician, 1.
Laundress, 6.	Painter, 13.
Laundryman, 1.	Paperhanger, 2.
Lawyer, 7.	Patternmaker, 1.
Leather dresser, 1.	Peddler, 5.
Liveryman, 5.	Photographer, 2.
Live stock dealer, 1.	Physician, 4.
Lumber dealer, 4.	Pilot, 1.
Lumberman, 1.	Plumber, 5.
Machinist, 9.	Policemen, 4.
Mail carrier, 2.	Polisher, 1.
Manufacturer, 1.	Porter, 1.
Marble cutter, 1.	Postmaster and harnessmaker, 1.
Manager express company, 1.	Printer, 8.
Manager yacht club, 1.	Professor, 1.
Mason, 11.	Railroad employee, 19.
Mason contractor, 1.	Rawhide factory supt., 1.
Matron, 1.	Railroad towerman, 1.
Mechanic, 4.	Real estate agent, 4.
Merchant, 15.	Real estate dealer, 2.

Deaths from Typhoid Fever per 100,000 population in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	20.2	20.0	20.2	16.8	17.0	16.2	15.2	17.2	13.2	12.6
Hudson Valley.....	50.7	34.3	36.0	25.4	35.1	28.4	26.1	27.3	21.5	20.0
Adirondack and Northern.....	38.5	24.4	24.7	27.8	31.5	26.7	27.9	26.1	18.9	19.1
Mohawk Valley.....	34.0	26.4	19.8	23.4	19.4	18.4	19.4	17.2	17.0	13.5
Southern Tier.....	32.9	24.8	23.3	25.5	21.2	17.5	27.9	20.3	20.1	22.5
East Central.....	27.4	25.7	17.7	17.1	19.4	16.9	14.1	18.8	17.0	16.0
West Central.....	28.8	19.0	15.8	36.7	20.5	18.0	19.4	14.3	19.0	13.7
Lake Ontario and Western.....	23.3	28.0	27.8	30.4	24.5	25.2	25.8	27.1	22.8	20.0
Entire State.....	26.7	23.4	17.4	21.5	20.9	19.2	19.0	19.8	16.0	15.1

In each 1,000 deaths there were from Typhoid Fever in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	10	10	11	10	9	9	8	9	8	8
Hudson Valley.....	28	20	23	14	20	17	15	15	13	12
Adirondack and Northern.....	26	17	20	21	22	18	19	17	13	13
Mohawk Valley.....	23	17	14	16	13	12	12	10	11	9
Southern Tier.....	24	18	17	20	11	12	19	13	13	15
East Central.....	20	18	13	14	12	11	9	11	10	11
West Central.....	20	13	11	24	13	11	13	9	13	9
Lake Ontario and Western.....	17	20	20	21	17	17	16	17	15	13
Entire State.....	17	13	14	14	12	12	11	11	10	9

Olean.....	18.5	1	10.5	2	20.8	3	30.7	3	30.3	2	20.0	0	.....	2	20.0
Jamestown.....	26.6	9	39.3	6	25.5	1	4.1	6	24.1	16	62.7	6	23.0	9	33.8
Schenectady.....	22.4	14	44.2	15	40.5	11	26.0	16	33.5	12	22.6	5	8.6	11	17.8
Cities using water from streams and reservoirs:															
Amsterdam.....	18.6	3	14.3	5	23.2	4	18.1	10	44.0	4	17.1	4	16.7	6	24.8
Glens Falls.....	35.7	6	47.6	8	61.4	2	14.9	4	28.9	7	49.2	3	20.4	7	46.5
Gloversville.....	19.4	9	49.0	1	5.4	8	43.3	2	10.8	1	5.4	4	21.4	1	5.3
Johnstown.....	17.1	7	69.1	0	.....	2	20.0	3	30.1	0	.....	1	10.2	2	20.4
Newburgh.....	39.5	11	44.1	6	23.7	12	47.0	9	34.7	11	42.0	10	37.1	11	41.3
New Rochelle.....	22.8	1	6.8	6	38.0	5	29.3	4	22.0	3	15.5	4	19.5	5	23.2
Plattsburg.....	21.2	2	23.7	3	34.1	1	11.0	2	21.1	0	.....	4	39.2	3	28.7
Rochester.....	13.7	30	18.4	32	19.2	19	11.2	21	12.1	27	15.2	19	10.5	30	16.2
Troy.....	44.9	76	101.2	42	55.7	37	48.8	25	32.8	34	44.4	36	46.8	28	36.2
Utica.....	17.3	8	14.1	9	15.6	12	20.3	10	16.6	11	17.8	6	9.5	18	27.6
Port Jervis.....	43.6	3	31.9	3	31.8	5	52.5	7	73.1	7	72.6	7	72.2	3	31.0
New York (Greater).....	17.0	718	20.8	727	20.4	762	20.8	684	16.8	659	16.9	635	15.8	639	15.5
Little Falls.....	34.3	13	125.2	3	28.5	4	37.5	3	27.7	4	36.4	0	.....	5	44.7
Oneida.....	14.5	1	13.3	2	25.9	3	38.0	0	.....	3	36.3	0	.....	1	11.8
Cities using filtered surface water:															
Hornell.....	23.3	3	25.1	4	32.8	4	32.1	7	55.0	1	7.7	4	30.2	1	7.5
Hudson.....	53.8	9	94.4	4	41.3	8	81.3	3	30.0	17	167.7	5	48.5	4	38.0
Kingston.....	19.5	2	8.1	3	12.1	4	16.0	5	19.9	3	11.8	8	31.3	4	15.6
Middletown.....	24.2	2	13.7	2	13.8	8	55.1	2	13.8	1	6.9	6	41.3	3	18.8
Mount Vernon.....	14.8	1	4.9	3	13.6	2	8.8	2	8.5	5	20.6	5	20.0	5	19.4
Oneonta.....	43.0	2	27.9	1	13.6	5	66.5	2	26.0	4	50.8	2	24.8	4	48.6
Yonkers.....	9.5	2	4.1	8	15.9	5	9.3	8	14.2	9	15.2	1	1.6	4	6.2

Pulton.....	3	22.0	5	42.5	0	0	0	Wells and springs.
Yuba.....	0	.....	1	6.4	3	19.2	19.2	Six Mile creek. Unfiltered until epidemic in 1903. Since then a filter has been used or water has been taken from deep wells and springs.
Chen.....	3	19.1	3	22.1	2	11.1	11.1	Driven wells.
Jameson.....	5	18.2	5	17.5	5	17.5	17.5	Artesian wells.
Schoenck.....	0	8.7	8	10.9	8	10.9	10.9	Large wells. Use of Mohawk river discontinued 1903.
Cities using water from streams and reservoirs:								
Amsterdam.....	4	15.9	0	0	3	11.9	11.9	Creeks with large reservoirs.
Glen Falls.....	7	45.3	6	36.9	1	6.1	6.1	Surface streams and storage reservoir.
Gloversville.....	1	5.3	7	37.3	2	10.7	10.7	Streams and storage reservoirs.
Johnstown.....	0	.....	2	21.1	0	0	0	Springs and streams.
Newburgh.....	11	41.0	10	36.4	13	47.4	47.4	Small streams and storage reservoir.
New Rochelle.....	5	22.0	7	28.0	6	24.1	24.1	Surface streams and storage reservoirs. Small quantity from wells at times.
Plattsburg.....	3	27.6	0	0	3	26.2	26.2	Surface streams and reservoirs.
Rochester.....	27	14.3	23	11.6	17	8.6	8.6	Kenilock lake and tributaries.
Troy.....	20	25.3	27	24.9	17	22.0	22.0	Small lakes and streams. Partial use of Hudson river discontinued May, 1904.
Utica.....	10	15.2	14	20.1	11	15.8	15.8	Small surface streams.
Port Jervis.....	5	51.0	0	0	2	20.1	20.1	Surface ponds and streams.
New York (Greater).....	740	37.4	536	12.8	564	12.7	12.7	The sources of supply for the different boroughs of Greater New York are as follows: Boroughs of Manhattan and the Bronx obtain their water from streams, lakes, ponds and reservoirs on the Croton, Bronx and Byram watersheds. Borough of Brooklyn, about 60 per cent of the water is underground water or is filtered through artificial filters; the remainder is surface water from streams and storage reservoirs. Borough of Queens water supply is underground water from driven wells. Borough of Richmond obtains underground water from wells. Surface water from two different streams. (Filter abandoned.) Springs.
Little Falls.....	1	8.8	3	25.9	1	8.6	8.6	Surface water from two different streams. (Filter abandoned.)
Oneida.....	0	.....	2	19.8	0	0	0	Springs.
Cities using filtered surface water:								
Hornell.....	1	7.5	2	14.1	8	21.2	21.2	Surface water. Filtered since 1899. (Mechanical pressure filter.)
Hudson.....	1	9.4	2	18.1	1	9.1	9.1	Hudson river, filtered prior to February, 1905. Former small streams filtered since then. (Slow sand filter.)
Kingston.....	7	27.0	6	22.9	8	30.6	30.6	Surface streams and Cooper lake, filtered. (Mechanical filter.)
Middletown.....	3	18.8	7	42.1	3	18.1	18.1	Surface water filtered. (Mechanical gravity and pressure filters.)
Mount Vernon.....	10	27.7	2	7.1	2	7.2	7.2	Surface water filtered. (Mechanical filter and sand strainer.)
Oneonta.....	3	23.8	4	66.2	7	79.6	79.6	Surface water filtered. (Mechanical pressure filter.)
Yonkers.....	8	11.9	7	9.6	5	6.8	6.8	Surface streams and storage reservoirs unfiltered; tube wells and Sawkill river, which is filtered. (Slow sand filtration.)

Year	City	No. of cases reported	Deaths
1892-93.	Lawrence, Mass.	141	32
1901.	New Haven, Conn.	514	73
1903.	Butler, Pa.	1,270	56
1903.	Cleveland, Ohio	3,443	472
1906.	Scranton, Pa.	1,155	111

The epidemics occurring in Lowell and Lawrence were due to the use of unfiltered water from the Merrimac river, into which was discharged the sewage from Lowell and other cities. In each instance the epidemic in Lawrence closely followed the outbreak in Lowell.

Returns at hand indicate that the death rate from typhoid fever in this State during 1909 was the lowest ever recorded — 15.0 per 100,000 population. The death rate in 1908 was 16.0. The average rate for the ten years preceding was 21.6. The urban death rate was higher than the rural by a fraction, but there is a steady decrease in the urban rate, especially in those cities active in seeing that their source of public water supply is properly protected from contamination. Statistics for 1909 are not yet complete and available for comparison with previous years.

The sources of public water supplies in this State may be classified as follows: Unfiltered lake water; unfiltered river water; filtered river water, well or spring water; streams and reservoirs.

It is a noticeable fact that in some instances our public water supplies are taken from those streams most grossly polluted, as will be seen from the following:

City	Source of water supply	Gross pollution of sources of supply
Cohoes.....	Mohawk river.....	Sewage discharged from several cities.
Dunkirk.....	Lake Erie.....	Sewage discharged from Dunkirk and Fredonia.
Lockport.....	Prior to 1909—Erie canal.	
Niagara Falls.....	Niagara river.....	Sewage discharged from Buffalo.
North Tonawanda.....	Niagara river.....	Sewage discharged from Buffalo.
Ogdensburg.....	Oswegatchie river.....	Sewage discharged from Gouverneur and other villages.
Oswego.....	Oswego river.....	Sewage discharged from Fulton, Syracuse and villages.
Tonawanda.....	Niagara river.....	Sewage discharged from Buffalo.
Watervliet.....	Mohawk river.....	Sewage discharged from several cities.

Owing to the inefficient type of the filtration plant in Watervliet, the typhoid death rate has averaged 57.5 during the past ten years.

It is therefore clear that the responsibility of purifying our public water supplies should not wholly be put on the filtration plants. Raw sewage must be removed from our streams used for public water supplies.

Efficient filtration is, however, the safest protection of water supplies against water-borne disease, as is clearly indicated by the great reduction in the mortality from typhoid fever in the following cities:

City	Average death rate from typhoid before improvement	After installation of filtration plants	Per cent. reduction in death rate
Ithaca	67.2	13.7	79.6
Albany	88.8	22.2	75.0
Binghamton	39.3	12.3	68.7
Watertown	94.7	37.4	60.5
Hudson	64.3	28.5	55.6
Rensselaer	95.5	44.2	53.7
Schenectady	25.0	13.7	45.1
Troy	58.2	32.3	44.5
Hornell	42.2	23.5	44.3
Elmira	54.9	36.1	39.7

The possibilities of a much greater reduction in the mortality from typhoid fever in most of the cities in the State is shown by the low death rate from typhoid fever in European countries. In the Annual Summary for 1908, published by the Registrar-General of England and Wales, the death rate from typhoid fever is given as follows: London, 5; Edinburg, 2; Glasgow, 8; Paris, 8; Rotterdam, 5; The Hague, 1; Copenhagen, 7; Stockholm, 1; Berlin, 4; Hamburg, 4; Dresden, 6; Breslau, 5; Munich, 3; Vienna, 4.

The dangers arising from the discharge of sewage into streams used for public water supplies are clearly reflected in the mortality statistics of the municipalities that use them; and it is therefore the duty of municipalities situated along the streams, first to

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In each 1,000 deaths there were from Diphtheria in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	32	28	28	31	26	21	24	21	23	22
Hudson Valley.....	21	20	16	12	13	12	13	17	13	9
Adirondack and Northern.	14	17	9	10	11	7	11	11	9	5
Mohawk Valley.....	20	22	20	16	15	11	15	10	10	7
Southern Tier.....	20	13	21	14	19	11	9	13	9	10
East Central.....	10	11	8	9	9	6	7	10	7	6
West Central.....	15	8	8	8	10	7	5	9	7	5
Lake Ontario and Western.	16	18	17	22	22	17	17	12	12	12
Entire State.....	25	23	23	24	21	17	19	18	18	16

Scarlet Fever and Measles

The reported mortality from scarlet fever and measles, and deaths per 100,000 population is shown by the following:

YEAR	Deaths from scarlet fever	Deaths per 100,000 population from scarlet fever	YEAR	Deaths from measles	Deaths per 100,000 population from measles
1885.....	1,184	21.1	1885.....	1,170	20.8
1886.....	1,011	17.7	1886.....	895	15.6
1887.....	1,267	21.7	1887.....	1,205	20.7
1888.....	2,452	41.2	1888.....	944	15.9
1889.....	2,205	36.4	1889.....	899	14.8
1890.....	913	14.8	1890.....	1,161	18.8
1891.....	2,252	35.6	1891.....	1,200	19.0
1892.....	2,177	33.8	1892.....	1,350	20.9
1893.....	1,626	24.8	1893.....	789	12.1
1894.....	1,227	18.8	1894.....	900	13.5
1895.....	850	12.6	1895.....	1,266	18.8
1896.....	759	11.1	1896.....	1,495	21.8
1897.....	841	12.1	1897.....	873	12.5
1898.....	837	11.8	1898.....	838	11.8
1899.....	730	10.2	1899.....	756	10.5
1900.....	689	9.4	1900.....	1,333	18.3
1901.....	1,430	19.2	1901.....	859	11.6
1902.....	1,215	16.0	1902.....	929	12.2
1903.....	1,057	13.6	1903.....	721	9.3
1904.....	1,194	15.1	1904.....	1,170	14.8
1905.....	726	9.0	1905.....	988	12.2
1906.....	690	8.4	1906.....	1,369	16.6
1907.....	1,032	12.2	1907.....	997	11.8
1908.....	1,688	19.8	1908.....	1,175	13.7
1909.....	1,205	14.0	1909.....	1,272	15.0

In each 1,000 deaths there were from Scarlet Fever in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime	6	15	13	10	11	6	6	9	17	20
Hudson Valley	4	7	5	7	3	4	1	3	5	3
Adirondack and Northern	4	6	6	4	5	2	2	1	2	1
Mohawk Valley	3	4	13	11	11	6	7	3	7	7
Northern Tier	5	3	5	5	9	3	1	3	2	3
East Central	3	5	2	2	6	9	4	3	2	5
West Central	3	2	1	1	1	2	2	3	2	2
Lake Ontario and Western	5	4	4	6	2	5	4	4	9	15
Entire State	5	11	11	8	8	5	5	7	12	9

In each 1,000 deaths there were from Measles in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime	11	6	10	7	11	7	14	8	13	13
Hudson Valley	10	5	2	3	8	9	5	4	3	4
Adirondack and Northern	9	15	5	3	1	11	3	2	1	4
Mohawk Valley	11	8	3	3	2	5	1	4	2	2
Northern Tier	6	5	5	2	9	2	1	4	2	2
East Central	8	13	2	5	4	4	3	1	4	6
West Central	5	6	3	3	3	4	3	2	2	1
Lake Ontario and Western	10	5	7	6	3	11	4	7	4	8
Entire State	10	6	8	9	10	8	10	7	8	9

Deaths from Violence

The reported mortality from Violence and deaths per 100,000 population due to accidents is shown by the following:

YEAR	Deaths from violence	Deaths per 100,000 population	YEAR	Deaths from violence	Deaths per 100,000 population
1885	2,994	53.3	1898	6,520	92.4
1886	3,290	57.6	1899	6,093	85.0
1887	3,780	64.7	1900	6,714	92.2
1888	3,842	64.6	1901	7,926	106.6
1889	3,834	63.2	1902	7,058	93.0
1890	4,542	73.4	1903	7,646	98.6
1891	5,028	79.6	1904	8,822	111.5
1892	5,543	86.1	1905	8,352	103.3
1893	5,295	80.9	1906	8,874	107.5
1894	5,487	82.7	1907	9,668	114.2
1895	5,880	87.3	1908	9,183	107.4
1896	7,022	102.6	1909	9,232	106.1
1897	6,172	88.7			

In each 1,000 deaths there were from Scarlet Fever in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	6	15	13	10	11	6	6	9	17	10
Hudson Valley.....	4	7	5	7	3	4	1	3	5	3
Adirondack and Northern.....	4	6	6	4	5	2	2	1	2	1
Mohawk Valley.....	3	4	13	11	11	6	7	3	7	7
Southern Tier.....	5	3	5	5	9	3	1	3	2	3
East Central.....	3	5	2	2	6	9	4	3	2	5
West Central.....	3	2	1	1	1	2	2	3	2	3
Lake Ontario and Western.....	5	4	4	6	2	5	4	4	9	15
Entire State.....	5	11	11	8	8	5	5	7	12	9

In each 1,000 deaths there were from Measles in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	11	6	10	7	11	7	14	8	13	13
Hudson Valley.....	10	5	2	3	8	9	5	4	3	4
Adirondack and Northern.....	9	15	5	3	1	11	3	2	1	4
Mohawk Valley.....	11	8	3	3	2	5	1	4	2	2
Southern Tier.....	6	5	5	2	9	2	1	4	2	2
East Central.....	8	13	2	5	4	4	3	1	4	6
West Central.....	5	6	3	3	3	4	3	2	2	1
Lake Ontario and Western.....	10	5	7	6	3	11	4	7	4	8
Entire State.....	10	6	8	9	10	8	10	7	8	9

Deaths from Violence

The reported mortality from Violence and deaths per 100,000 population due to accidents is shown by the following:

YEAR	Deaths from violence	Deaths per 100,000 population	YEAR	Deaths from violence	Deaths per 100,000 population
1885.....	2,994	53.3	1898.....	6,520	92.4
1886.....	3,296	57.6	1899.....	6,093	85.0
1887.....	3,780	64.7	1900.....	6,714	92.2
1888.....	3,842	64.6	1901.....	7,926	106.6
1889.....	3,834	63.2	1902.....	7,058	93.0
1890.....	4,542	73.4	1903.....	7,646	98.6
1891.....	5,028	79.6	1904.....	8,822	111.5
1892.....	5,543	86.1	1905.....	8,352	103.3
1893.....	5,295	80.9	1906.....	8,874	107.5
1894.....	5,487	82.7	1907.....	9,668	114.2
1895.....	5,889	87.3	1908.....	9,183	107.4
1896.....	7,022	102.6	1909.....	9,232	106.1
1897.....	6,172	88.7			

In each 1,000 deaths there were from Violence in the —

DISTRICTS	Decade, 1885-1894	Decade, 1895-1904	1905	1906	1907	1908	1909
Maritime.....	39.0	57.7	53.5	63.1	66.4	69.0	65.4
Hudson Valley.....	40.7	49.3	64.6	58.3	60.3	61.9	70.0
Adirondack and Northern.....	36.7	46.2	52.3	56.1	54.0	60.4	53.7
Mohawk Valley.....	43.5	53.1	58.8	60.9	61.5	60.4	68.4
Southern Tier.....	51.0	55.5	67.0	59.4	63.3	62.7	66.9
East Central.....	44.0	50.0	54.5	60.9	63.7	62.1	61.5
West Central.....	44.5	51.7	58.0	63.6	63.3	64.1	65.8
Lake Ontario and Western.....	48.5	57.0	66.2	74.2	71.2	63.1	73.4
Entire State.....	40.3	55.8	61.0	63.2	65.3	66.1	65.8

In each 1,000 deaths there were from Diarrhea in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	56	93	85	75	76	83	74	79	81	69
Hudson Valley.....	68	40	42	35	36	43	35	20	43	35
Adirondack and Northern.....	72	41	33	38	23	43	34	35	45	39
Mohawk Valley.....	65	41	44	35	40	41	44	47	53	50
Southern Tier.....	55	30	34	35	23	29	37	25	34	22
East Central.....	68	31	33	28	20	32	36	37	41	35
West Central.....	57	28	35	26	26	35	36	22	30	26
Lake Ontario and Western.....	86	60	56	50	53	50	57	46	52	48
Entire State.....	62	72	67	60	60	65	61	63	66	56

In each 1,000 deaths there were from Pneumonia in the —

DISTRICTS	1903	1904	1905	1906	1907	1908	1909
Maritime.....	89	110	125	137	78	64	70
Hudson Valley.....	70	78	75	79	77	65	70
Adirondack and Northern.....	57	60	66	74	81	60	71
Mohawk Valley.....	64	73	77	76	80	70	66
Southern Tier.....	55	70	70	60	71	61	60
East Central.....	64	83	75	61	66	56	70
West Central.....	60	72	70	65	65	57	56
Lake Ontario and Western.....	51	65	65	60	54	50	55
Entire State.....	80	95	104	109	75	62	67

SPECIAL REPORT ON VITAL STATISTICS

BY

Prof. Walter F. Willcox, Consulting Statistician

SPECIAL REPORT ON

EUGENE H. PORTER, M. D., *State Commissioner of Health,*

SIR: — I have the honor to submit my third report as consultant. In preparing it I have been aided at several points by advance

The following table shows the main statistical results of register

TAB

Population, Births, Deaths, Stillbirths, Marriages

YEAR

1885.....
1886.....
1887.....
1888.....
1889.....
1890.....
1891.....
1892.....
1893.....
1894.....
1895.....
1896.....
1897.....
1898.....
1899.....
1900.....
1901.....
1902.....
1903.....
1904.....
1905.....
1906.....
1907.....
1908.....
1909.....

VITAL STATISTICS

CORNELL UNIVERSITY, ITHACA, N. Y., *August 1, 1910.*

Albany, N. Y.:

ing statistician upon the vital statistics of New York State. In figures kindly furnished me by the Bureau of the Census. tration in New York State since 1885.

LE I

and Divorces in New York State — 1885-1909

Probably before this report is printed the population of New York State, April 15, 1910, will be made public by the Bureau of the Census and, with the help of that information, the population in the middle of the year 1909 can be estimated with reasonable accuracy. Until then a provisional estimate by a method explained in the last report must be used. This indicates a population of 8,706,039. Accepting this estimate, the death rate or average number of deaths to 1,000 persons in 1909 is 140,261 divided by 8,706,039, or 16.1. The computed death rate of the State has not been so low for twenty-three years and probably the computed death rates in 1885 (14.3) and 1886 (15.2) were much below the true rates because in those first two years of registration many deaths were not recorded. If that be true, the year 1909 stands at the high water mark of public health in the history of New York State. If the death rate in 1909 had been the same that it was in 1890, namely 20.8, the number of deaths in the State last year would have been 181,086 instead of 140,261. In other words, the decline of the death rate in the course of nineteen years represents an annual saving of the lives of 41,303 persons. Or it may be stated thus: In an average group of 10,000 persons living under the New York conditions of 1890 there were forty-eight more deaths annually than in an average group living under the New York conditions of 1909. It has been estimated* that "for every fatal case of illness there are from four to five more cases which end in recovery." If that be correct the saving of 41,303 lives annually means a saving in a single year of between 150,000 and 200,000 cases of serious illness.

Whether the conditions in this State last year were exceptional or whether it merely shared with other States of the registration area in the blessings of an unusually healthy season can not be determined until the records for other States become available for comparison. In order to determine the position of New York State among the rapidly increasing number of registration

* Registrar-General's Report for 1881, p. xvi.

In each 1,000 deaths there were from Scarlet Fever in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	6	15	13	10	11	6	6	9	17	10
Hudson Valley.....	4	7	5	7	3	4	1	3	5	3
Adirondack and Northern.....	4	6	6	4	5	2	2	1	2	1
Mohawk Valley.....	3	4	13	11	11	6	7	3	7	7
Southern Tier.....	5	3	5	5	9	3	1	3	2	3
East Central.....	3	5	2	2	6	9	4	3	2	5
West Central.....	3	2	1	1	1	2	2	3	2	3
Lake Ontario and Western.....	5	4	4	6	2	5	4	4	9	15
Entire State.....	5	11	11	8	8	5	5	7	12	9

In each 1,000 deaths there were from Measles in the —

DISTRICTS	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Maritime.....	11	6	10	7	11	7	14	8	13	13
Hudson Valley.....	10	5	2	3	8	9	5	4	3	4
Adirondack and Northern.....	9	15	5	3	1	11	3	2	1	4
Mohawk Valley.....	11	8	3	3	2	5	1	4	2	2
Southern Tier.....	6	5	5	2	9	2	1	4	2	2
East Central.....	8	13	2	5	4	4	3	1	4	6
West Central.....	5	6	3	3	3	4	3	2	2	1
Lake Ontario and Western.....	10	5	7	6	3	11	4	7	4	8
Entire State.....	10	6	8	9	10	8	10	7	8	9

Deaths from Violence

The reported mortality from Violence and deaths per 100,000 population due to accidents is shown by the following:

YEAR	Deaths from violence	Deaths per 100,000 population	YEAR	Deaths from violence	Deaths per 100,000 population
1885.....	2,994	53.3	1898.....	6,520	92.4
1886.....	3,296	57.6	1899.....	6,093	85.0
1887.....	3,780	64.7	1900.....	6,714	92.2
1888.....	3,842	64.6	1901.....	7,926	106.6
1889.....	3,834	63.2	1902.....	7,058	93.0
1890.....	4,542	73.4	1903.....	7,646	98.6
1891.....	5,028	79.6	1904.....	8,822	111.5
1892.....	5,543	86.1	1905.....	8,352	103.3
1893.....	5,295	80.9	1906.....	8,874	107.5
1894.....	5,487	82.7	1907.....	9,668	114.2
1895.....	5,889	87.3	1908.....	9,183	107.4
1896.....	7,022	102.6	1909.....	9,232	106.1
1897.....	6,172	88.7			

other causes. A test of that question is enlightening. As the estimates of population and so the rates computed from them are somewhat doubtful, attention has been confined to the total number of deaths. In each case the number of deaths in 1900 has been taken as 100 per cent. and the ratio of the deaths in each following year to that number has been found. The following figures give the results for New York State as a whole, New York city and the rest of the State:

YEAR	NEW YORK STATE		NEW YORK CITY		REST OF STATE	
	Tuber- culosis, all forms	All other causes	Tuber- culosis, all forms	All other causes	Tuber- culosis, all forms	All other causes
1900.....	100	100	100	100	100	100
1901.....	101	99	99	100	104	98
1902.....	93	94	94	96	92	92
1903.....	98	96	99	95	96	97
1904.....	104	108	105	112	103	104
1905.....	103	104	102	104	103	104
1906.....	106	106	109	108	102	105
1907.....	107	112	109	112	104	111
1908.....	107	105	108	102	105	107

Apparently in this State the increase in deaths from tuberculosis has just about kept pace with the increase from all other causes of death. In some years it was smaller and in others larger. The same seems to be true for New York city and for the rest of the State. The result is apparently a negative one. No influence of the special campaign against tuberculosis can be traced in the figures.

One complicating element, however, must be kept in mind. Perhaps a significant proportion of the deaths from tuberculosis are credited to some other cause. Perhaps this proportion has been decreasing and figures for tuberculosis have been getting nearer the truth. If this be so, the change may be important enough to hide completely the influence of the antituberculosis campaign. All that can now be said is that no evidence of the influence of that campaign appears clearly in the figures for the State.

far from a census enumeration are unsafe. Hence, the number of deaths only will be considered. Taking the figures for 1900 in each class as 100 per cent., the ratios of deaths from all forms of tuberculosis and of deaths from all other causes in the State as a whole, in New York city and the rest of the State in 1909 are as follows:

NEW YORK STATE		NEW YORK CITY		REST OF STATE	
Tuberculosis, all forms	Other causes	Tuberculosis, all forms	Other causes	Tuberculosis, all forms	Other causes
103	106	106	104	100	108

These figures indicate that in the State as a whole and especially in the State outside the metropolis the deaths from tuberculosis are beginning to show a less increase than those from all other causes, and hence that during the last year the death rate from tuberculosis has decreased more than the general death rate. However, if the figures above are compared with those presented in the preceding section, considerable fluctuation between 1900 and 1909 will be noted, so that a persistent trend in the figures is not apparent. Thus far the study suggests that we are just at the point where significant results from the anti-tuberculosis fight are beginning to appear.

In order to find whether there is any basis for the suggestion that a real downward trend in the tuberculosis figures may be masked by an improved diagnosis, bringing deaths into that class which formerly would have been charged to other causes, a study has been made of the deaths from each form of tuberculosis. Attention was directed first to the two classes "tuberculosis of the lungs" and "all other forms." The following table indicates the per cent. that each of these formed of the total deaths from tuberculosis in the States which were included in the registration area

that points to the correctness of this theory is that the proportion which deaths from tuberculosis other than that of the lungs forms to the total deaths from all forms has changed much less in New York city than in the rest of the State. There is little doubt that greater advance in accuracy has occurred in the State outside the metropolis than in it, because both medical knowledge and accuracy in registration statistics were already greater in the city.

By reference to the following table for New York State, it is possible to see in what special minor forms of tuberculosis the increases have been greatest. The figures for 1900 are again used as 100 per cent.

Various Forms of Tuberculosis — New York State

YEAR	Tuber- culosis of lungs	Tuber- culosis of larynx	Tuber- culous menin- gitis	Abdom- inal tuber- culosis	Pott's dis- ease	Tuber- culous abscess*	White swell- ing*	Tuber- culosis of other organs	General tuber- culosis
1900.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1901.....	99.9	143.8	99.7	110.4	95.0	150.0	90.9	126.5	129.1
1902.....	91.1	132.6	105.9	105.7	120.0	75.0	110.9	122.1	99.3
1903.....	95.2	140.4	110.9	108.3	119.0	175.0	107.3	161.8	132.6
1904.....	102.3	139.3	104.1	120.2	138.0	75.0	112.7	170.6	148.2
1905.....	100.9	131.5	101.1	125.0	137.0	187.5	129.1	183.8	125.5
1906.....	103.9	113.5	118.4	129.5	136.0	50.0	140.0	160.3	127.0
1907.....	103.6	169.7	123.2	125.6	145.0	225.0	136.4	211.8	154.6
1908.....	103.2	151.7	169.3	128.0	159.0	162.5	132.7	202.9	141.8
1909.....	100.4	140.4	126.2	115.8	91.0	337.5	74.5	239.7	117.0

* The mortality from these two forms is comparatively slight and, especially in the case of tuberculous abscess, fluctuates greatly, so that these figures are of insignificant value.

Tuberculous meningitis and abdominal tuberculosis each destroys larger numbers than any other minor forms; the above table shows that material increases have occurred in the number of deaths from these two. Even more striking increases are shown in the figures for tuberculosis of the larynx, tuberculosis of other organs and general tuberculosis. The corresponding figures for the states which were included in the registration area in 1900 shows the same tendency.

The most important truth which this study should impress is that the "anti-tuberculosis campaign" is not in reality a campaign at all, but a war, a war which undoubtedly will require years of hard fighting; and that signs of victory must not be ex-

e. Is the excess of his earnings over the cost of his own maintenance during his period of self-support an element?

f. Is the probable duration of subsequent life of an average man at the age of thirty an element?

g. Is the amount of probable future earnings but for the premature death an element?

h. Is the amount of his probable future earnings but for the death to be diminished by the probable cost of his future maintenance?

i. Is the added value of his product over what it costs in materials, wages and miscellaneous or incidental expenses to produce it an element?

All students agree that the loss of earnings, added cost of maintenance during the sickness and the amount of annual earnings are elements. They differ regarding the propriety of including the cost of rearing or of production. The first efforts in this country to deal with the question, by Dr. Biggs and Dr. Thomas, included it, but in all the more recent examinations of the subject (Hoffman, Price, Glover, Fisher, Willcox) this element of loss is omitted. No students include both the cost of the man's production and also his future earning power. The choice is between one and the other. On the average and in the long run a man, like any other agency of production, must pay for himself, that is, he must earn enough money to cover the cost of the investment which he represents. When any material thing of value but not an agency of production is destroyed, for example, a house is burned down, the only available measure of the economic loss sustained, is the cost of building or producing the house or that cost minus its deterioration in value between its building and its destruction. But when the thing destroyed is an agency of production, like a mill, the measure of loss might be the cost of rebuilding the mill or the loss of the mill's future earnings during its probable life time. Clearly it could not be the sum of these.

All authorities agree in regarding *a*, *b* and *c* in the preceding list as elements in the problem and in making *d* and *e* on the one hand and *f* and *g* on the other alternatives, either pair of which

of this act is very simple. It is merely that the death of an individual should no longer terminate the right of action. Under the earlier law a person maimed or injured by such an accident had a right to sue, but if he died, the right to sue died also. Lord Campbell's Act kept the right alive in such cases, vested it in the "wife, husband, parent and child" and allowed the jury to give "such damages as they may think proportioned to the injury resulting from such death to the parties respectively for whom and for whose benefit such action shall be brought."

As already stated this statute has been imitated in most American states. In cases falling under it the measure of damages is the economic loss caused by the death. The New York statute provides that the damages may be such as the jury or, if there be no jury, the court or the referee "deems to be a fair and just compensation for the pecuniary injuries resulting from the decedent's death to the person or persons for whose benefit the action is brought." The New Hampshire statute is more specific and allows the "probable duration of his life but for the injury and his capacity to earn money" to be considered as elements of damage. The practice in the other States conforms to this specific provision of the New Hampshire law. From an examination of awards which have been made by juries under these statutes and upheld on appeal by the higher courts certain principles may be derived.

a. No excessive or punitive damages can be imposed as an indirect punishment of the person or corporation responsible for the death. (A few States are exceptions.)

b. Damages cannot be increased as a means of solacing the grief of survivors.

c. Damages are not to be reduced proportionately in cases where the deceased held a life insurance policy.

d. In computing the amount of damage standard life tables are admissible as evidence.

e. The damage is measured by the probable amount of the future earnings over and above what would be needed for the person's support; in other words, the test of probable future earnings rather than that of cost of production is applied.

the probable cost of maintenance, only during his minority. This is closely connected with the practice in most States refusing damages to a parent for the death of a child who has attained majority unless the child since reaching that age has actually assisted the parents. The loss to society from such a death may be much greater than the loss to the parents. Under the legal rule it would seem that the damages recoverable by a parent for the death of a single woman who had just attained her majority would be nominal, but if she were married the damages recoverable by her husband might amount to thousands of dollars. In this particular I believe that the economic loss should not be determined by the rule followed in the courts. The reason for the legal rule is clear, namely, that there is no person entitled to receive the damage and that society cannot sue and recover as an individual. This reason has no application to the economic problem.

Regarding the method of computing the economic loss from the death of a husband and father or wife and mother I find a substantial agreement between the decisions of the courts and the opinions of the majority of economic writers. That loss is the sum of three elements; (1) the excess of probable future earnings over cost of future maintenance, (2) the decrease of earnings and (3) the increase in cost of maintenance during the period of sickness. This agreement is due to the fact that the economic loss to society and the money loss to the family are substantially identical. But students of the economic problem apply the same method to all children and to adults who have no persons partly or entirely dependent upon them and for that reason entitled to sue in court. If at some time in the future a city or village shall be held responsible at law for the ill effects of an epidemic of small pox or typhoid fever due to the incapacity or negligence of its health officers, as it may now be held responsible for accidents due to defective streets or sidewalks, the damages would be assessed in such a way as is here outlined.

The three papers on this subject read at the International Congress on Tuberculosis by Professor Fisher, Professor Glover and the present writer, all followed this method, but Professor

our assumption on this point, it would raise his figures still further to \$240,000,000.

He neglected also deaths at ages below twenty and above sixty. According to our results to allow for such deaths would increase his figures by 14 per cent., or bring them up to \$270,000,000. Neither did he make any estimate of the money value of deaths among women. We have assumed that the net prospective earnings of a woman are one-half those of a man of like age, and given reasons. If this assumption were accepted it would raise his figures by about 42 per cent., or to \$383,000,000.

Professor Glover made no allowance for the reduction of earnings and the increased cost of maintenance during illness. Our figures estimated this at about one-fifth of the lost future earnings. Introducing this element brings his figures to \$460,000,000. We estimated also the loss from bovine tuberculosis in New York State as between 2 and 3 per cent. of the loss from human tuberculosis.

The most serious flaw in the assumptions to which he has applied the method is found in his hasty acceptance of the deaths recorded in the Twelfth Census for the entire country as a basis for his computations. Those results are derived from two widely different sources, the records of deaths made in states and cities having an approximately accurate registration of deaths, and those made in states or parts of states which had no such system. In the latter each enumerator was instructed to ask of each family, Has any death occurred in this family within the last twelve months? That method was introduced in 1850 and followed persistently for six censuses. Experience has proved that not more than seven-tenths, and probably not more than two-thirds of all the deaths which occur can be secured upon a record obtained in such a manner. It has now been discarded. The mortality tables constructed from these returns of the Twelfth Census are so wide of the truth as to have little, if any, application to the real problem.

The life tables prepared by insurance companies from their own experience are somewhat better, but labor under a different defect. The insured are a select class, living longer and suffering less from disease, especially tuberculosis, than the mass of the

DIVISION OF COMMUNICABLE DISEASES

[259]

DIVISION OF COMMUNICABLE DISEASES

ALBANY, N. Y., *April 1, 1910.*

EUGENE H. PORTER, M. D., *State Commissioner of Health,
Albany, N. Y.:*

DEAR SIR:— I have the honor to herewith transmit the report covering the work of the Division of Communicable Diseases during the year 1909, the same having been compiled with the able assistance of Dr. F. C. Curtis, Consulting Dermatologist of the Department.

Very respectfully,

WILLIAM A. HOWE, M. D.

Director

The following diseases have been designated by the State Commissioner of Health, under the law, for report to the Department by health officers, monthly or in the case of some of them more frequently or as they occur: Tuberculosis, diphtheria, scarlet fever, measles, typhoid fever, cerebrospinal meningitis, smallpox, ophthalmia neonatorum. Reports from every municipality have been received during 1909 except seven, which have by their failure made themselves sufficiently conspicuous for mention, viz.: the towns of Watertown, Jefferson county; Monroe, Orange county; Piermont, Rockland county; Orange, Schuyler county; Cohocton, Fremont and Tusten, Sullivan county. Otherwise reports, some of them with lapses of a few months, have been received from all of the 1,422 municipalities. There has been almost a unanimous response from the health officers, some of them it must be said as a result of much urgency from this division. But the Department has been favored with the very general co-operation of the health officers all through the State.

The result has been to secure the report, for 1909, of 138,315 cases of these diseases. In 1908 the number so reported was

last year in the registered number of 16 per cent.; this year there is a further increase of 20 per cent. over the year before. In the State there were 6,252 more cases placed on record in 1909 than in 1908.

The metropolitan cities of New York and Buffalo in 1907 reported 20,000 cases; in 1908 the number was increased to 24,000; in 1909 the number is 27,067. In the State outside the two cities there were reported in 1907, 2,100 cases; in 1908, 2,635 cases; in 1909, 5,820 cases.

Those increments are respectively in a metropolitan population of nearly 5,000,000, and a non-metropolitan and rural population of nearly 4,000,000. In the former more exact returns are expected. The reports this year outside the large cities are more than double those of the year before, which indicates the more perfect effect being secured under the tuberculosis law.

In 1908 in New York city the number of deaths from pulmonary tuberculosis was to the number of reported cases as 1:2.6; in 1909 there were fewer deaths and more cases reported for the year, and the proportion is as 1:3. For the rest of the State, in 1908 there were more deaths than reported cases; in 1909 the reported cases have increased to exceed the mortality in the proportion of 1:1.3. The showing is for better returns in the State at large, but it is apparent that tuberculosis is not fully reported. If the proportion of reported cases to deaths in the city had been obtained in the rest of the State there would have been a record of 16,500 cases for the year instead of 6,900.

The betterment in reports as the registration law is coming into effect is more manifest in the cities, where earlier response would be expected. In the cities of Buffalo, Rochester, Syracuse, Albany, Troy, Utica, Yonkers and Schenectady there were reported in 1908, 1,528; this year 2,677. In 1908 there were 1,632 deaths in these cities — more deaths than reported cases for the year. In 1909 there were 1,609 deaths and 2,677 reported cases, or a proportion of 1:1.7. But there is a disproportion among them in reporting. In Buffalo, Albany, Troy, Yonkers there were about two reported cases to one death, in Rochester and Utica fewer cases than deaths were reported.

estimating the population at 8,000,000, there were 175. This year there are 160 deaths per 100,000 population.

New York city this year has 195 deaths per 100,000 population; the rest of the cities have 130; the rural part of the State, 120.

The deaths from consumption per 100,000 population in the Sanitary Districts are:

YEAR	Maritime	Hudson Valley	Adirondack	Mohawk Valley	Southern Tier	East Central	West Central	Western
1909.....	190	161	130	125	80	120	103	120
1908.....	205	172	138	133	96	125	113	116

In each 100 deaths from all causes there were from consumption:

YEAR	Maritime	Hudson Valley	Adirondack	Mohawk Valley	Southern Tier	East Central	West Central	Western
1909.....	11.4	9.6	8.8	8.3	5.2	7.8	7.0	8.0
1908.....	12.0	10.0	9.5	8.0	6.0	7.7	7.0	8.0
Avg, '99-'08..	11.6	10.4	9.7	8.5	6.9	8.5	7.5	8.3

From every point of comparison, not only in recent time, but in all the years of records kept by this Department, the Southern Tier District is uniformly the one showing the greatest freedom from pulmonary tuberculosis; the Maritime District has the highest, its death rate as well as its relative mortality being just double that of the district lowest in the scale of prevalence and mortality from this cause. The distribution of the disease as shown by its reported mortality, now as likewise in former years, indicates its greatest prevalence in urban populations and the comparative freedom of rural areas from it.

The seasonal prevalence of tuberculosis is not very significant; its fatality is more pronounced in the inclement seasons of the year, and when pneumonia and especially influenza are prevalent.

Tuberculosis Mortality by Months

	1908
	Urban
January.....	1,009
February.....	1,074
March.....	1,082
April.....	1,066
May.....	998
June.....	901
July.....	925
August.....	853
September.....	865
October.....	853
November.....	876
December.....	910

Tuberculosis, other than pulmonary, caused 2,112 deaths, as follows, and for the two years prior:

	1907	1908	1909
Tuberculosis of larynx.....	153	111	125
Tuberculous meningitis.....	1,055	1,128	1,111
Abdominal tuberculosis.....	405	421	389
Pott's disease.....	114	129	91
Tuberculous abscess.....	35	22	27
White swelling.....	39	39	41
Tuberculosis of other organs.....	160	162	163
General tuberculosis.....	200	185	165
Totals.....	2,161	2,197	2,112

The evidence of decrease in pulmonary tuberculosis, not notable in tuberculosis of other parts of the body, may to some degree be attributed to the general war of defense that is being set up everywhere against this disease, which although as yet largely initial, may be seen it is fair to say already bearing fruit. If the rate of mortality of the last decade had prevailed in 1909, there would have been 1,300 more deaths this year; if that of twenty years ago, instead of 14,000 deaths there would have been 17,500.

As to the schoolroom as a factor in tuberculosis, in one instance the community was much stirred up over the permission of a boy to attend public school whose father had advanced tuberculosis and was very indifferent in his habits. An exceedingly reckless subject might perhaps infect all his surroundings, but the chance of tuberculous infection at second hand must be remote.

The question of permitting teachers or pupils who have tuberculosis of the lungs to attend school is a different one and has been answered in the negative.

In the United States census report for 1908 the ratio of deaths from consumption in 1,000 deaths from all cases was:

Of males engaged in all occupations.....	150
Of male school teachers	138
Of females engaged in all occupations.....	210
Of female school teachers	211

This is a better showing for the occupation of school teacher than that reported in the Transactions of the International Congress of School Hygiene, London, 1907, which gives a ratio for male teachers of 184 against 154 for males of all occupations, and 256 for female teachers, against 215 for all occupations.

In the correspondence of the year is this letter, which shows the educational value of tuberculosis leaflets distributed among the people, a point of view prevalent among its subjects, and the potentialities of indifference: "I got at the State Fair a little booklet entitled 'Hope.' My husband employs a tinsmith who has consumption. He is a man who thinks it is no worse for others to have the disease than for him. He boards at the same hotel we do, uses the general cuspidors which are emptied on one end of the celery bed, and spits everywhere out of doors. This man knows he has consumption but says and acts as though he does not care how much he spreads the disease. He is a good workman and if he were compelled to use the necessary precaution I believe he would not be dangerous." The right attitude toward the consumptive has been learned by this correspondent.

With the information obtained measures were taken to protect the public health in the case.

Emphasis is laid in the tuberculosis law upon the disinfection of premises after removal or death of an occupant having had tuberculosis. Very likely house infection plays a small part compared with direct infection from the tuberculous subject "who coughs in the faces of others or in talking showers them with sputum," but observations have shown that the infection left behind, especially in domiciles otherwise unhygienic, is not to be neglected. The health officer must see that disinfection has been satisfactorily done.

Question as to the provision for indigent subjects of tuberculosis, especially when he is the bread-winner for the family, is often met. Fortunately this is being met by the law of 1909, introduced by Dr. Wood, Chairman of the Committee on Public Health of the Assembly, which placed in the hands of the State Commissioner of Health the power to determine the location of hospitals or camps for the treatment of pulmonary tuberculosis. Such hospitals are being provided by county or voluntary action, where a place is found for incipient or advanced cases, which furnish a chance for cure of the one or relieve the community of the risk of infection from the other. Registration which discloses cases, sputum examinations which determined the diagnosis, the great work of voluntary associations, and the providing of tuberculosis hospitals, have been effective during 1909 toward the control of this chief cause of long illness and mortality.

Diphtheria

The cases of diphtheria reported in 1909 were 20,659 in number, just 100 less than in 1908. Of this number 16,052 came from New York city. The number of deaths in the State was 2,306, which is 162 less than in 1908; in the city 1,715, or 50 less than 1908. Of the 2,306 deaths, 99 were returned as from croup.

In the metropolis diphtheria caused 2.3 per cent. of all the deaths; in Buffalo, 1.6 per cent.; in other cities an average of 1 per cent., Yonkers, Binghamton and Jamestown showing an

excess; the total urban diphtheria mortality was 2 per cent. of the deaths from all causes; the urban diphtheria mortality was 0.6 per cent. of the total.

In 1898 there was an abrupt decrease in the mortality for diphtheria. Prior to that time 71,000 deaths had occurred in thirteen years, an average yearly of 5,465, with no year less than 4,500 and some years exceeding 6,500, and an average of more than 80 deaths a year per 100,000 population. In 1898 the number of deaths fell to 2,600, has not since exceeded 3,300 and the average yearly mortality has been 2,750, a rate of 35 deaths per 100,000 population. The saving has been effected mostly through the use of diphtheria antitoxin. The entire series of twenty-five years, over which our records extend, reaches back just to the time of the discovery and publication of the Klebs-Löffler bacillus. Midway of that period comes the sudden decrease in mortality, commencing, indeed, in 1895, which had 1,600 fewer deaths than in 1894, with further moderate decrease for the succeeding two years, and then the abrupt drop in 1898 of 1,500 from the preceding year, and the low rate since maintained. Antitoxin serum as a remedy for diphtheria was published about 1893; its gradual acceptance followed to such degree as to affect the mortality of 1895, 1896 and 1897 moderately, and in 1898 its use was becoming general. In 1901 the law was enacted which authorized a State Antitoxin Laboratory under the direction of the State Department of Health, since which time, with a liberal use of the serum made possible by its free distribution, the mortality has been from 3,000 to the low rate of this past year of 2,300, which is indeed the lowest mortality yet attained; one of 26 deaths per 100,000 population. It is doubtless true that diphtheria is generally more benign than it formerly was, and part of the reduction in mortality may be due to this. In New York city the number of deaths was 11 per cent. of the number of reported cases, while in the rest of the State the percentage was 13. This may be interpreted as due to a possible freer and speedier use of antitoxin because of its greater accessibility, but on the other hand may be due to a less complete return of cases. All health officers in the State are required to keep on hand a supply of antitoxin for immediate use in any emergency,

its municipalities to the local health officer. Such physicians are amenable to the laws of that State and can be proceeded against under them; they are notified of the gravity of this offense and informed that they must answer for it to the authorities where it was committed.

A school was closed on account of prevalence of diphtheria for two weeks and the rooms fumigated; a few days after opening again new cases appeared in different rooms, no pupils from quarantined houses having been admitted; propose to again close the school and repair the plumbing, which is thought to be at fault and the cause of the fresh cases. Answer. Long experience shows that bad plumbing is seldom the cause for continuance of diphtheria contagion; it is found that the real cause in almost every case of prolonged epidemics is individual contagion and usually to be traced to inefficient measures of quarantine. Frequently it is prolonged by persons in apparent perfect health carrying virulent diphtheria germs, and particularly where patients who have had diphtheria are discharged without rigid bacteriological control. The circulars set forth the necessity of insisting on repeated examinations to prove the absence of diphtheria bacilli before release from quarantine. Antitoxin assures the avoidance of mortality and the immunizing of those exposed, but does not eliminate the persistence of contagion. To successfully cope with an epidemic no one carrying diphtheria germs should be allowed at liberty. Other ways of prolonging epidemics have a place in literature, but personal communication is the chief one to be considered.

On the strength of two negative cultures taken at one-day intervals an individual within a week after onset was released from quarantine, who had clinical symptoms of diphtheria, including nasal as well as faucial membranous deposit, and further there was a case of diphtheria in the vicinity. Suggested: Such a case should never be released from quarantine on evidence like this. It is always unwise to disregard the clinical evidence of diagnosis; several negative cultures even taken with due precautions have been followed by subsequent positive cultures. When the clinical evidence is clear or even suspicious a quarantine should be main-

Scarlet Fever

There were 22,740 reported cases of scarlet fever, 13,000 from New York city. In 1909 there were 31,893, with 24,426 from New York city.

In the city there was one death to 16.5 cases; outside the city there was one death to twenty-three cases reported. Last year the number of deaths in the city to reported cases was one to nineteen; in the rest of the State, one to twenty-one. For the entire State the mortality to morbidity was the same for both years, viz.: one to nineteen.

In 1908 there were twenty deaths per 100,000 population; in 1909 there were fourteen. The mortality for scarlet fever in 1908 has not been equalled since 1892, when and for four years prior the number of deaths exceeded 2,000. For the last fifteen years the average yearly mortality has been less than 1,000. For periods of from two to six years there is a low death rate from scarlet fever, to be followed by periods of four or more years, of excess. Since 1885 the number of deaths per 100,000 population has ranged from eight to forty-one. For many years there has been no approach to the mortality that prevailed from 1888 to 1893. For the past twenty-five years there has been an average yearly mortality from scarlet fever of 18.5 per 100,000 population.

The decrease from last year has been in the eastern part of the State, largely in New York city. In the western and southern there has been an actual increase. The urban mortality is diminished, the rural is unchanged. The total urban mortality from scarlet fever was 1,905, or 17 per 100,000 population, against 25 in 1908; the rural was 109, or 5 per 100,000 population, the same as in 1908.

In the six months of winter and spring 9,225 of the 13,000 cases were reported, and 800 of the 1,200 deaths occurred.

The difficulty in diagnosis of mild cases has continued during the year and has been the subject of correspondence and investigation. In diagnosis emphasis has been laid on one sudden onset; two early sore throat; three enlargement of glands, not only of the neck but general; four eruption (often evanescent and in one or two cases absent) as to its orderly onset, locality and evolution.

tine period unless it is over-prolonged, although the scales themselves are not essentially infectious. There appears more reason to believe that while scarlet fever is mostly a contact disease its infection has an almost unlimited vitality on material from about the sick and failure to destroy this has been the chief reason for persistence and recurrence, as so often occurs at the fall opening of schools, when such material is brought out and exposure occurs. To secure and control the first case is the surest way to prevent an epidemic.

As stated in a report by Dr. Curtis of an investigation of a prolonged outbreak at Granville, to which the health officer had given sedulous attention at personal sacrifice: "The lack of co-operation of the people makes the control of an epidemic of mild scarlet fever difficult. Sometimes and too often the physicians have been slow to recognize and report cases. The public is also lax in meeting its legal duty to declare cases. It is my personal belief that scarlet fever is one of the most difficult diseases to diagnosticate absolutely when it is very mild. But, when it is prevalent, every young person taken abruptly ill with a fever and rapid pulse along with sore throat, followed (and possibly not followed, for I have seen instances where it was altogether lacking which were nevertheless scarlet fever) by even the slightest redness and eruption on the chest and face, should be regarded as having scarlet fever and isolated immediately, especially as they communicate the disease from its earliest commencement. It does not require medical skill to recognize these symptoms, and every citizen ought to help the health board by declaring the existence of such and isolating them. I would advise the board to publish this as a regulation and require parents to report such cases and to enforce it by a fixed penalty. The people have ignored the board and I would advise that it let them know that legal powers are vested in it by the law. Then as to disinfection of the premises, this had better be done after the formula of our disinfection leaflet. Formaldehyde candles may be effective but they are certainly no better than the less expensive permanganate method of generating formaldehyde, which this disease requires the free and thorough use of. It is a common experience that articles of clothing or things in drawers and boxes escape d'

serious thing to interfere with the orderly working of these institutions in a community. One can hardly imagine its ever being done in a city or large village. It appears to have been too readily resorted to by boards of health in the more rural localities, and it is a question how far their action may be sustained by the courts if it is brought before them. As a general rule the children in a community can be better watched if they are assembled, for thus by daily inspection mild cases can be detected which would otherwise be overlooked, and closure of the school does not prevent their mingling on the street. In the lack of medical inspectors, teachers can be instructed to make a personal investigation every morning and if they detect any with signs of fever and sore throats or any indisposition that is suspicious or learn of suspicious illness in the family of attending pupils, such can be dismissed and the health officer notified. Better would be a daily medical inspection during the active period of an epidemic. In this way better track can be kept of an outbreak than would be possible if all children are at large, and their daily assemblage may be used as a means for handling it. The only risk that an undetected case may cause exposure may by exacting care be mostly obviated. The same can be done with the youthful part of a church congregation; the adults will hardly enter into the question. To secure every case and isolate it and subsequently to destroy the infection manufactured by it is the plain proposition for the control of scarlet fever, and not embargo the community in its established institutions. It is nevertheless true that, at least as a last resort or a temporary expedient, it comes within the powers and duties of a board of health to prohibit as has been done all under a certain age from attending any school, church or place of public amusement for a stated period, and to close the same by a special regulation.

A question raised by more than one health officer and perhaps entertained by others is one as to his professional relation to a suspected communicable disease. As put by one, is it the duty of a health officer at the request of an attending physician to visit and give an opinion as to the diagnosis of the case? Or, as another asks, must the diagnosis of an attending physician be accepted as final; and further, shall he determine when the case should be re-

classed with the septic or pyogenic; it is at least of later time not the large contributor to the death rate that it formerly was. But measles is just as prevalent and as fatal as it was years ago, in the early part of this series of years which covers the time of practical knowledge of bacteriology applied to the communicable diseases. There have been more deaths from it during the last five years than in any other five-year period. There have also been more deaths during this period from measles than from scarlet fever. There were more deaths in 1909 from measles than from scarlet fever.

The city mortality from measles for the year was 18.2; the rural, 4.7 per 100,000 population. The average city mortality for the preceding five years was 16.0 per 100,000 population, with a range from 14.0 to 19.1. The average for rural districts for the same period was 6.4 deaths per 100,000 population with a range from 4.8 to 8.7. Scarlet fever for the same period had an average urban mortality per 100,000 population of 17.2, and a rural of 4.8.

The age at death incidence of measles taken from the last U. S. Census Reports is an average of 4.2 years, that of males being a little under this and of females a little over. The median age, that is the age which has an equal number of decedents above and below it, is 1.8 years. The only diseases having a lower average age incidence at death are whooping cough and croup. The young therefore should be protected from exposure to measles.

Deaths from pneumonia, meningitis and the like immediately sequent to measles are recorded as deaths from measles. How far pulmonary tuberculosis from which death is more remote is set up through measles there is no statistical record of value, but the catarrhal condition attending measles, whooping cough and influenza are believed by clinical observers to contribute to the tuberculosis mortality.

Measles is not a disease which warrants the light regard in which it is held by the people. It is looked upon as inevitable and exposure is often courted. To a considerable degree it is inevitable for it is most contagious and few go through life without having it. But the least that can be said regarding courting or avoiding it is that to some it is extrahazardous. For instance,

In 1908 there were reported 6,871 cases of typhoid fever with 1,368 deaths, a rate of one death in five reported cases, which would go to show that the type of the disease this year is milder. Indeed, this has been true, for in some of the localities in which there was a very considerable number of cases the mortality was very small in comparison.

In New York city there were 12.7 deaths for typhoid fever per 100,000 population; in the rest of the cities of the State there were 21.1 deaths for 100,000 population; and in the non-urban part of the State there were 14.6 deaths per 100,000 population, the rate for the entire State being 15. The high rates are in the cities outside the metropolis.

The following cities had a typhoid fever death rate exceeding 20 per 100,000 population for the year: Buffalo, 25.0; Troy, 22.0; Elmira, 34.0; Niagara Falls, 75.0; Watertown, 40.0; Newburgh, 47.0; Kingston, 31.0; Poughkeepsie, 23.0; New Rochelle, 24.0; Cohoes, 83.0; Oswego, 27.0; Lockport, 50.0; Corning, 124.0; Ogdensburgh, 27.0; Hornell, 21.0; Rensselaer, 30.0; Cortland, 24.0; Plattsburg, 26.0; Tonawanda, 27.0; North Tonawanda, 55.0; Oneonta, 80.0. The combined rate for the twenty-one cities is 33.0. The average of their rates is 40, and average of their rates for ten years prior is 46. If these are taken from the totals, the rate for the State would be 13.0; and for the State outside New York city, 14.0. Of the cities having an excessive typhoid fever mortality of 40 or over per 100,000 population, Niagara Falls in the last two years (prior to which time it had a rate of from 115 to 185) has fallen in 1908 to 87, and in 1909 to 75; part of its river water supply is now being filtered. Watertown prior to 1905 had for six years an average rate of nearly 100, and since then with mechanical filters in use the rate has been from 25 to 50. Newburgh for the past ten years has had an average rate of 40; this year there has been an excessive prevalence; its water supply is from small streams. Cohoes has the same mortality rate as its average for the past ten years; it uses unfiltered Mohawk river water, but is to install a filtration plant. Lockport also has the same rate as its ten-year average, but is having a new water supply from the Niagara river at North Tonawanda. The rate of North Tonawanda, with a Niagara river

during the summer. It likewise takes its water supply from the St. Lawrence, which receives typhoid excreta from points where the disease prevails, from its mouth to Ogdensburg, and notwithstanding its laboratory purity is unfit to drink raw. The typhoid bacillus might exist in this water supply, though not found in the laboratory examination of a small amount. It can well be stated that no water is safe for drinking purposes into which raw sewage is emptied, unless the same be subjected to the latest and best known process of filtration. At Walden, in the fall, typhoid fever has been prevalent for the past three years at least. In a population of 4,000 there were 38 cases in 1907, in 1908 there were 29 with 4 deaths, and 29 in 1909 with 3 deaths. Its water is from several driven wells, some of which show existence of intestinal impurity. At East Kingston there were about fifty cases, in a settlement of laborers living in a most insanitary way and spreading the disease, much of it by contact. At Wingdale there were cases among the laborers in a marble quarry, some of whom found their way to New York city hospitals.

In the annual Report of the Department for 1908 it was stated that the death rate from typhoid fever was the lowest ever recorded in the State, 16.0 per 100,000 population. For the ten years preceding the average rate had been 21.6. This year, 1909, it is still lower, 15.0 per 100,000 population. Not only the relative but the actual number of deaths from typhoid fever this year has been smaller than in any of the twenty-five years of record of this Department, except the first two, which were incomplete. With an average yearly of 1,534, this year there were 1,309. There have been years of certain long epidemics in which the total for the State has nearly reached 2,000, but generally with considerable uniformity there have been about 1,600 deaths yearly from typhoid fever. The city mortality from typhoid fever as a whole is higher than the rural. This is partly due to the fact that not a few cases credited to city mortality are of rural origin, contracted in the country by transient residence there, or drawn from the country to city hospitals. But urban mortality as a whole is made larger by reason of an excessive mortality of a few cities as has been shown. The city, with its controllable water supply, should be freer from typhoid fever than the country with

of this disease developed in a young immigrant a few days after leaving quarantine, in the town of Saugerties, proving fatal after a short illness.

CEREBRO-SPINAL MENINGITIS

Four hundred and sixty-six cases were reported during the year, of which 342 were from New York city. As cerebro-spinal meningitis is credited with 485 deaths the report of cases is incomplete. Three hundred and twenty-three of the deaths were from New York city, 72 from other cities, and 90 deaths were rural. Undoubtedly it is not seldom confused with other diseases, not only during life but on the death certificate, especially when sporadic cases appear to occur. Its largest prevalence was in the spring months, and the fewest were in the winter. There was no epidemic prevalence during the year in the State outside of New York city, where two-thirds of the deaths occurred.

EPIDEMIC POLIOMYELITIS

There was a not inconsiderable epidemic of this disease in the early fall, ending in October, in St. Lawrence county, in towns about Gouverneur. As this occurs epidemically and there is increasing evidence of its being an acute infectious disease, with some degree of communicability from the sick or from their environment, having also a period of incubation partly established, it may be noted in this chapter.* It is apparently a germ-produced disease, but diligent search for its specific micro-organism has not been yet rewarded. In numerous instances it has apparently resulted from contagion, but it has not been carried away to new points of prevalence by the sick and has been taken only by coming not only into the presence of the sick but into the infected area. Its period of incubation, that is of development of the disease after either having come into the epidemic

* At the Rockefeller Institute Flexner has recently demonstrated, in a communication of extraordinary interest, that poliomyelitis can be produced experimentally in the monkey by inoculating it with spinal cord from a subject, the disease developing in this animal after a period of inoculation of from four to thirty-three days and pursuing a course analogous to that in the human subject; and it has been transferred from animal to animal without break. He has demonstrated that a recovered animal has become immune to the disease. The organisms constituting the virus are so small that they cannot be seen under the microscope, and that they pass through filters that bar the passage of all bacteria; he therefore calls it a filterable virus, which exists in other infectious diseases, such as yellow fever. We know nothing of this virus apart from or outside of its host; there is no evidence that filterable viruses have a saprophytic existence. He suggests that, as with epidemic cerebro-spinal meningitis, the naso-pharynx is the part of the body most concerned in disseminating the virus of epidemic poliomyelitis.

Smallpox in New York State — 1909



said to have been introduced by a subject of smallpox from Canada, and up to the end of December had 30 cases, Buffalo and several towns of Erie county received the infection, and it almost simultaneously reached North Tonawanda in Niagara county, where 35 cases occurred and its epidemic was in full tide at the end of the year, Lockport and Niagara Falls being likewise affected. This locality is a stronghold of the opponents to vaccination and it was because of this that the epidemic was extensive and prolonged and indeed lasted far into 1910. The warrant for this is found in the fact, verified by experience this year, that when a locality is promptly and generally vaccinated there is no further spread of smallpox; those who have had smallpox have been unvaccinated. No casualties of any sort from vaccination have come to the knowledge of the Department during the year.

There appears to be a growing conviction that attempts other than vaccination to control smallpox are practically futile. The type of the disease has continued mild; a few persons have had it severely and to a disfiguring degree, but while there have by a moderate estimate been 1,000 cases, for certainly some have failed of detection, there have been not more than 5 deaths. Because it is mild it is easily scattered; people perhaps unconscious of the nature of their ailment go from place to place and no locality is safe from having it brought in; no one is sure not to meet with it in public conveyances. It is impossible to prevent this. Therefore there is no safety for anyone except by vaccination. Acting on this the health officials of two or three States have given up trying to protect the people from the negative side, that is by apprehending the sick and quarantining them; they have placed on the people the burden of self-protection and required them to guard themselves by having themselves vaccinated. We all very well know that if the school children are vaccinated a person having smallpox can attend the school without the least risk to them; that such a person can walk the streets and mingle with the people and no one will contract the disease. Unmindful of this and the easily available safeguard at the hand of everyone, a loud demand is made to shut up a person with this

five days prior to eruption, and it has been observed by us before that at this age a severe case of chickenpox has given a history of thus prolonged malaise prior to appearance of the exanthem.

OPHTHALMIA NEONATORUM

During the past year much valuable work has been done for the suppression of ophthalmia neonatorum. The state-wide campaign, which was so wisely and thoroughly planned by the late Dr. Wheeler, has been energetically pushed, and most satisfactory results obtained.

It has been highly gratifying to find such a ready response to the appeal issued to the physicians of the State, and to note the keen interest taken by the profession, in a determined effort to prevent this needless affliction to the new-born.

In prosecuting this work, an extensive correspondence has been carried on with over six thousand physicians in the State, outside of New York and Kings counties. As can well be appreciated this has been of decided advantage to the Department. It has enabled us to materially extend our acquaintance where most needed, among the medical profession, and to familiarize ourselves with those who are doing the accouchment work of the State. It has enabled us to tabulate, as will be seen below, those who do obstetrical work, and those who do not; to list those who agree to use some approved prophylaxis against ophthalmia neonatorum in all cases of child birth, as well as those who prefer not to commit themselves.

It has given us a practical working directory of physicians, to whom supplies can be sent with every assurance of their being used as suggested, thereby avoiding waste of time and material.

It has afforded an ideal means of arousing a mutual interest between the physician and the Department, not only in this particular effort, but sanitation in general. In short, it has been productive of much good, and will make its influence felt for years to come.

In addition to this correspondence work among the physicians, the midwives have been carefully looked after. So far as could be ascertained there are 243 midwives practising within the State. Many of them are ignorant women, utterly unconscious of

Table of Correspondence with Physicians on Ophthalmia Neonatorum

COUNTY	Number who have <i>signed</i>	Number who do no obstetrical work	Number who have not signed	Total	Remarks
Albany.....	153	30	54	237	
Allegany.....	53	.....	12	65	
Broome.....	84	38	39	161	
Cattaraugus.....	65	9	16	90	
Cayuga.....	62	15	31	108	
Chautauqua.....	93	6	41	140	
Chemung.....	73	11	10	94	
Chenango.....	44	2	16	62	
Clinton.....	35	9	9	53	
Columbia.....	45	4	15	64	
Cortland.....	37	2	10	49	
Delaware.....	41	.....	26	67	
Dutchess.....	90	18	27	135	
Erie.....	474	189	194	857	
Essex.....	26	.....	24	50	
Franklin.....	41	1	16	58	
Fulton.....	38	6	16	60	
Genesee.....	41	1	10	52	
Greene.....	31	.....	11	42	
Hamilton.....	1	.....	4	5	
Herkimer.....	52	2	25	79	
Jefferson.....	81	13	46	140	
Lewis.....	18	.....	12	30	
Livingston.....	42	.....	29	71	
Madison.....	50	6	15	71	
Monroe.....	276	54	111	441	
Montgomery.....	42	3	13	58	
Nassau.....	59	.....	33	92	
Niagara.....	87	8	33	128	
Onelda.....	144	48	58	250	
Onondaga.....	228	96	55	379	
Ontario.....	69	3	12	84	
Orange.....	100	30	35	165	
Orleans.....	36	3	10	49	
Oswego.....	78	13	13	104	One refusal.
Otsego.....	56	8	23	87	
Putnam.....	6	.....	9	15	
Queens.....	85	.....	95	180	
Rensselaer.....	110	24	44	178	
Richmond.....	27	1	34	62	
Rockland.....	31	1	15	47	
St. Lawrence.....	75	20	36	131	
Saratoga.....	53	2	25	80	
Schenectady.....	55	22	31	108	
Schoharie.....	34	.....	9	43	
Schuyler.....	16	2	12	30	
Seneca.....	36	4	8	48	
Steuben.....	84	13	43	140	
Suffolk.....	70	22	35	127	
Sullivan.....	32	2	13	47	
Tioga.....	33	3	15	51	
Tompkins.....	47	13	18	78	
Ulster.....	60	9	27	96	
Warren.....	36	9	15	60	
Washington.....	40	3	19	62	
Wayne.....	51	.....	18	69	
Westchester.....	215	69	83	367	
Wyoming.....	40	2	10	52	
Yates.....	25	3	1	29	
<i>Total.....</i>	<i>4,806</i>	<i>858</i>	<i>1,719</i>	<i>6,777</i>	

As will be seen from the above, practically two-thirds of all the physicians of the State, outside of New York and Kings counties, have joined with the Department of Health, in a common crusade against ophthalmia neonatorum. Even more than this, as m

and has since been seldom below it. This was coincident with the appearance of the first grippe epidemic.

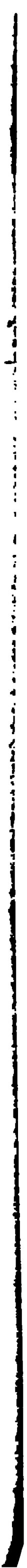
There was also an increase of 1,500 in the mortality from consumption, an increase in that from diseases of the nervous system, a moderate increase in the digestive and circulatory diseases, and also in the deaths from old age and other enfeebling conditions. Since 1890 these increases, chiefly in deaths from pneumonia and other acute diseases of the respiratory system, on which it primarily expends itself, have coexisted with the influenza epidemics, have swelled with the tide of the epidemic and have varied with the severity of the epidemic, that from respiratory diseases ranging from 16,000 to over 20,000 deaths annually. The inference is that this increase has been mainly due to epidemic influenza.

Assuming this, estimates have been made of the probable mortality from this cause from the first as the course of the epidemics have been noted year by year. The following table is brought down from one taken from the Annual Report of the Department of five years ago. It is certainly impossible to state with any accuracy how much of the mortality can be legitimately attributed to influenza in the twenty years since its annually recurring epidemics began, but there are grounds for believing that these estimates are approximate and that pretty nearly 150,000 deaths in that time have been due to it.

Estimated Mortality from Epidemic Influenza

EPIDEMIC YEAR	Height of epidemic	Duration	Mortality	Acute respiratory mortality of year
1890.....	January.....	3 months	5,000	18,053
1891.....	April.....	6 months	8,000	20,697
1892.....	January.....	5 months	8,000	20,432
1893.....	April.....	6 months	6,000	19,807
1894.....	January.....	4 months	3,000	15,885
1895.....	February.....	4 months	5,000	17,725
1896.....	March.....	5 months	2,750	16,820
1897.....	March.....	4 months	3,000	16,277
1898.....	March.....	6 months	2,500	16,350
1899.....	January.....	5 months	7,000	17,938
1900.....	March.....	6 months	11,500	19,232
1901.....	January.....	5 months	7,000	17,589
1902.....	February.....	6 months	5,000	16,986
1903.....	March.....	6 months	8,000	17,339
1904.....	March.....	6 months	10,000	21,132
1905.....	February.....	5 months	9,000	17,832
1906.....	March.....	6 months	9,000	20,178
1907.....	January.....	6 months	10,000	22,663
1908.....	January.....	5 months	9,500	18,477
1909.....	March.....	5 months	9,000	20,781

essentially a chronic disease, with remissions and aggravations characterized by languor and enfeeblement with intestinal disturbance, eventually with nervous disturbances both mental and physical, and with eruption upon the skin, the exposed parts mostly, which is reddened or inflamed and subsequently following repeated attacks of dermatitis becoming dark of color and rough. The study this disease is receiving will evolve more definite knowledge of its prophylaxis.



TUBERCULOSIS CAMPAIGN

EUGENE H. PORTER, M.D., *State Commissioner of Health,
Albany, N. Y.:*

DEAR SIR — I have the honor to submit herewith a report on the Traveling Tuberculosis Exhibition of the Department of Health for the year 1909.

During the year the Tuberculosis Exhibition of the New York State Department of Health was shown in thirteen cities in the following order: Binghamton, Oswego, Cohoes, Poughkeepsie, Yonkers, Middletown, Newburgh, Kingston, Syracuse, Corning, Olean, Jamestown and Dunkirk.

In each city the campaign of popular education in connection with the exhibit was prosecuted with vigor, and under the joint auspices of this Department and the State Charities Aid Association, gratifying results were achieved.

Large attendance at the exhibition and public meetings is of the utmost importance in bringing forcibly to the individual the facts that he should know to make it possible for him to do his part in the warfare against the disease. Experience has shown, however, as in the case of the city of Dunkirk, the inauguration of public and official effort for the suppression of tuberculosis may follow quickly in the wake of a campaign for popular education that has been most unsuccessful in point of reaching the people. The rapidity with which local official measures are adopted is usually gauged by the energy exerted by a few influential citizens who become interested.

The total attendance at the exhibition in the thirteen cities was 125,348. The largest attendance was at Syracuse, where the figures reached 24,405, or about 20 per cent. of the entire population. This splendid result was achieved despite the coincidence of an unusually active municipal political campaign with several mass meetings in progress in various parts of the city simultaneously with the tuberculosis meetings. How these results were secured is detailed in Plate I, a reprint from the Syracuse Post-

Standard. The results in Syracuse were particularly gratifying as experience has demonstrated the difficulty of enlisting the public attention in a work of this character on account of the multiple religious, social and amusement activities competing for attention.

The smallest attendance was at Dunkirk, where 3,402 persons called in person at the hall where the exhibit was held. Undoubtedly the inclement weather, stretching over the entire period of the campaign in that city, was the cause.

Gauging results by the percentage of the population of the various cities that was interested to the extent of going to the exhibition and meetings, Olean captured the honors. Sixty-eight per cent. of its population responded. Yonkers had the smallest percentage of its population (13.9) secure the benefits of the educational campaign. Binghamton, with 14.4 per cent., was the only other city showing less than 20 per cent. of total population in attendance. The average attendance in all the cities compared to the total population was 34.7 per cent.

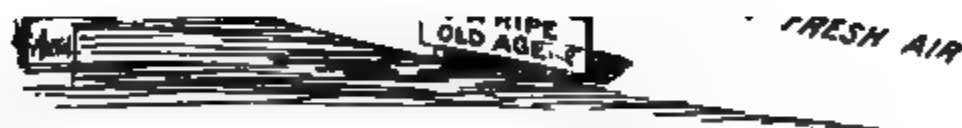
NEWSPAPER CO-OPERATION

That the public press in the thirteen cities liberally supported this effort to educate the people in the prevention of tuberculosis is shown by the fact that the newspapers in the thirteen cities devoted 465 columns of matter to the subject. Most of the newspaper publicity consisted of regular reading matter, advance notices of the various features of the campaign, large display advertisements, either contributed by the papers or by the merchants of the respective cities. (Plate II.) Some space was devoted to the printing of the large educational banners and cartoons originated by the Department. (Plates III to V.) The newspapers of the city of Middletown devoted 63 columns and 14 inches to the campaign, thereby holding the record for the year. The smallest of space (14 columns and 14 inches) was given by the press of Kingston. The average amount of space for the thirteen cities was thirty-six columns.

LITERATURE DISTRIBUTION

The literature on tuberculosis for which the Department endeavored to secure as general distribution as possible consisted of

Plate III



WHICH PATH ARE YOU ON?
NEW YORK STATE DEPARTMENT OF HEALTH.

Plate VI

Newburgh, N. Y., April 22, 1909.

Dear Doctor:

The Newburgh Bay Medical Society will hold a special scientific meeting, at the Palatine Hotel, Newburgh, Wednesday afternoon, April 28, at 3.30 o'clock. This meeting is incidental to the Newburgh Campaign for the Prevention of Tuberculosis.

Through Dr. Eugene H. Porter, State Commissioner of Health, the following has been arranged:

Dr. HERBERT MAXON KING,

Physician in Chief, Loomis Sanitarium, Loomis, N. Y.

"The Diagnosis of Incipient Tuberculosis."

Dr. LEWIS GREGORY COLE,

Radiographic Expert, New York City Department of Health.

"The X-Ray in Diagnosis of Early Pulmonary Tuberculosis"
with slide demonstrations.

At 5.30 o'clock a colation will be served in the private dining room of the Palatine, at which non-members attending the meeting will be guests of the Society. Please reply immediately on the enclosed postal, whether or not you will attend.

Dr. E. C. THOMPSON, Secretary.

Dr. E. ROSS ELLIOTT, President.

the "Don't Card," a fac simile of which is printed as plates XI-XIII, volume I, Annual Report of 1907. It was also sought to give the circular on "Consumption," issued by the Division of Communicable Diseases of the Department as general distribution as the "Don't" card. During the latter part of the year there was also included for general distribution reproductions of the large pictorial educational banners, on paper 18 x 24 inches, shown on page 312, volume I, Annual Report of this Department, for 1908. This banner sheet was also tacked up on walls in factories, offices, post-offices and other public places. A large percentage of the literature was placed in the hands of school children, who either attended the exhibition and meetings with their teachers or were lectured to in their school rooms.

The number of "Consumption" leaflets given out was 80,710; "Don't" cards, 90,220; banner sheets, 5,500. Total, 176,430.

MEDICAL MEETINGS

It has been the policy of the Department from the inception of its teaching tuberculosis exhibition to hold scientific medical meetings under the auspices of local medical societies in connection with the local educational campaign. For each such meeting the Department furnished a physician eminently qualified to deliver a paper on a subject related to tuberculosis. The paper most generally dealt with the diagnosis of incipient tuberculosis. The Department organized these meetings, detailed physicians from its staff of lecturers and in most cases printed in the program and invitation which was sent by the local medical society to physicians of all schools within a radius making it convenient for them to attend. Plate VI represents a typical invitation to a medical meeting.

Programs of the medical meetings follow:

Binghamton

Monday, January 12, 1909.

Under auspices of Broome County Medical Society, Dr. Emily H. Wells presiding. "The Diagnosis of Incipient Pulmonary Tuberculosis," Dr. Albert H. Garvin, superintendent of the State Hospital for Incipient Tuberculosis at Raybrook. "The Use of

*Newburgh**Wednesday, April 28, 1909*

Under auspices of the Newburgh Bay Medical Society. "The Diagnosis of Incipient Tuberculosis," Dr. Herbert Maxon King. "The X-ray in Diagnosis of Early Pulmonary Tuberculosis," with slide demonstration, Dr. Lewis Gregory Cole.

*Kingston**Friday Evening, May 21, 1909*

Under auspices of Medical Society of the County of Ulster. "The Diagnosis of Incipient Pulmonary Tuberculosis," Dr. Albert H. Garvin, Raybrook, N. Y. "The Use of the X-ray in the Diagnosis of Pulmonary Tuberculosis," Dr. Arthur F. Holding, Albany.

*Olean**Thursday, November 18, 1909*

Under auspices of Medical Society of the County of Cattaraugus, Dr. W. W. Jones, president of society, presiding. "The Diagnosis of Incipient Pulmonary Tuberculosis," Dr. H. Burton Doust, chief of Syracuse Municipal Tuberculosis Clinic.

*Jamestown**Thursday, December 9, 1909*

Under auspices of Jamestown Medical Society. "The Duties of the Ordinary Practitioner, when Confronted with a Case of Incipient Tuberculosis," Dr. George William Beach, attending physician Mountain Sanatorium, Binghamton, N. Y. Dr. J. J. Mahoney, president of society, presiding.

*Dunkirk**Wednesday, December 8, 1909*

Under auspices of Dunkirk and Fredonia Medical Society. "The Duties of the Ordinary Practitioner when Confronted with a Case of Incipient Tuberculosis," Dr. George William Beach.

The total attendance at the medical meetings for the year was 356.

The thanks of this Department are hereby acknowledged to the physicians who delivered papers as above noted.

AT THE STATE FAIR

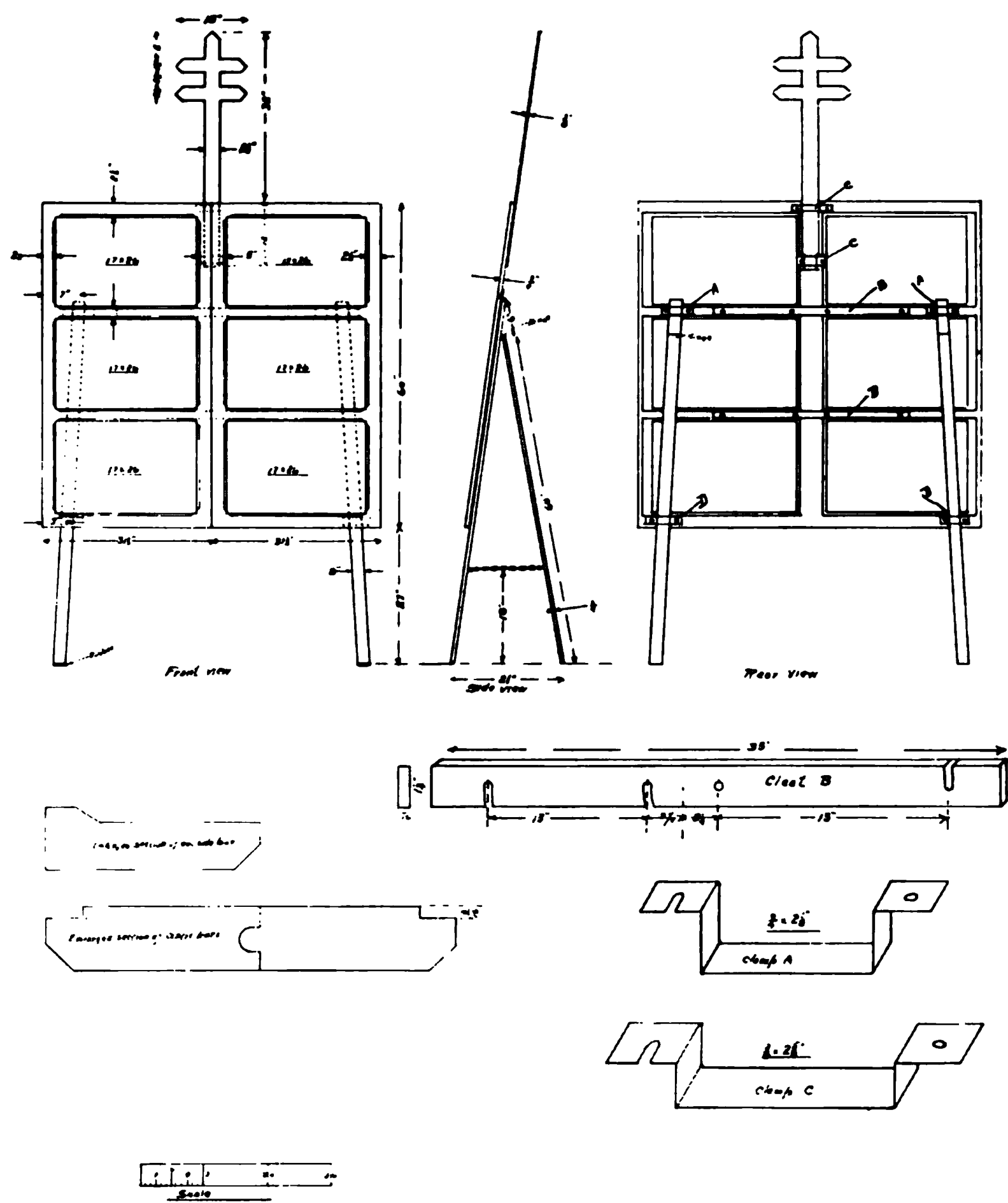
Independently of the Department's general exhibit, dealing with the work of the several divisions in detail, in the State building at the New York State Fair, September 13 to 18, 1909, the traveling tuberculosis exhibit of this Department was installed in another building and was viewed by thousands of those attending the fair.

RECONSTRUCTION OF EXHIBIT

The exhibition of this Department as shown at the International Congress on Tuberculosis at Washington, September 21 to October 12, 1908, continued in use for the municipal campaigns in this State without alteration until the summer of 1909. It comprised many charts of a technical nature incomprehensible to the layman. Other features were presented in an uninteresting manner and the text in many cases was in too fine type to be easily read. There was also a lack of classification of the various phases of the subject. Mechanical arrangements were employed that were cumbersome and made the cost of transportation greater than necessary. It was therefore deemed advisable to reconstruct the exhibit, and acting under your instructions to produce the best exhibit possible with the funds in hand, an entire rearrangement and popularization of the subject-matter was effected. All superfluous text was eliminated. The type employed was clear and distinct with a minimum height of one-quarter inch. Many of the charts were beautifully colored and the attractiveness of the exhibit considerably enhanced. The subject-matter was divided into twelve subdivisions, as follows:

- A. Statistics of Tuberculosis.
- B. Nature of Tuberculosis.
- C. How the Disease Spreads.
- D. How to Stop Its Spread.
- E. How to Cure the Disease.

Plate IX



WORKING DRAWING OF MECHANICAL FEATURES OF SMALL EXHIBIT.

- F. Organizations Against Tuberculosis.
- G. The Community Against Tuberculosis.
- H. The State Against Tuberculosis.
- I. The State Hospital at Raybrook.
- J. The Public Health Association Against Tuberculosis.
- K. Private Sanatoria Against Tuberculosis.
- L. Private Sanatoria Against Tuberculosis.

Each of the above sections comprised eighteen framed cards, twenty-two by twenty-eight inches, arranged in tiers of six horizontally. The upper tier of charts on frames being elevated several feet above the line of vision and necessarily removed from close scrutiny contained only brief aphorisms and terse facts in letters one and a quarter inches high. The two lower tiers being so situated so as to permit closer study contained the smaller text and illustrations, mostly water color drawings and photographs. (Plates VII–VIII.)

A special small tuberculosis exhibit for use in schools, railway stations, post-offices, factories, etc., submitted by the Department in the competition for a prize offered by the American Medical Association at Atlantic City, June 8 to 11, 1909, was awarded honorable mention. (Plates IX–X.) The special features claimed for this exhibit were as follows:

The tuberculosis exhibit submitted by the New York State Department of Health in the competition for a prize offered by the American Medical Association at its annual session in Atlantic City, June 8th to 11th, has been designed to meet the requirements of an inexpensive yet comprehensive presentation of the subject in a form that could be conveniently transported and easily installed under a variety of conditions in railway stations, post-offices, schools, halls, etc.

Realizing the value of repeated statement of facts as a powerful means of causing the mind to retain desired information, this exhibit has been planned to be regarded with fresh interest by a person, even though he has previously studied it. This end is achieved by a complete change of the text and pictorial contents of the exhibit at certain intervals.

For instance, the exhibit has been installed in a schoolhouse by the local health officer or person to whom it has been loaned by

During the year 152 physicians delivered this lecture in behalf of the Department. The lecture was also used by physicians and laymen in many localities where the exhibition was not shown, the slides being loaned by the Department.

The thanks of this Department are due and are hereby expressed to the following physicians who delivered lectures:

Dr. J. P. Wilson (delivered lecture)	Arlington
Dr. W. A. Moore	Binghamton
Dr. Emily H. Wells	Binghamton
Dr. L. D. Farnham	Binghamton
Dr. Joseph Kane	Binghamton
Dr. George H. Jenkins	Binghamton
Dr. George W. Beach	Binghamton
Dr. H. C. Sears	Binghamton
Dr. George H. Lathrope	Binghamton
Dr. C. A. Squires	Binghamton
Dr. Francis Fronczak	Buffalo
Dr. Charles R. Borzilleri	Buffalo
Dr. J. L. Archambeault	Cohoes
Dr. John Archibold	Cohoes
Dr. E. M. Bell	Cohoes
Dr. J. C. E. Daunais	Cohoes
Dr. M. J. Keough	Cohoes
Dr. J. F. McGarrahan	Cohoes
Dr. J. H. Mitchell	Cohoes
Dr. G. U. Peltier	Cohoes
Dr. C. L. Witbeck	Cohoes
Dr. J. L. Miller	Corning
Dr. J. N. Shumway	Corning
Dr. H. B. Smith	Corning
Dr. T. A. McNamara	Corning
Dr. H. E. Batten	Corning
Dr. E. H. Hutton	Corning
Dr. E. J. Carpenter	Corning
Dr. J. F. Dwyer	Corning
Dr. F. S. Swain	Corning
Dr. A. H. Rodgers	Corning

Dr. Mary E. Dunning.....	Newburgh
Dr. W. Stanton Gleason.....	Newburgh
Dr. John T. Howell.....	Newburgh
Dr. Andrew V. Jova.....	Newburgh
Dr. E. O. Mitchell.....	Newburgh
Dr. Edward Thompson	Newburgh
Dr. Charles E. Townsend.....	Newburgh
Dr. W. H. Snyder.....	Newburgh
Dr. Antonio Stella.....	New York
Dr. A. E. Smith.....	Olean
Dr. J. Ross Allen.....	Olean
Dr. Casson Smith.....	Olean
Dr. J. E. K. Morris.....	Olean
Dr. Benjamin Van Campen.....	Olean
Dr. Walter A. Cowell.....	Olean
Dr. William H. Mountain.....	Olean
Dr. Mary B. Jepson.....	Olean
Dr. E. H. Torrey.....	Olean
Dr. J. P. Booth.....	Olean
Dr. Thomas B. Loughlen.....	Olean
Dr. H. S. Albertson.....	Oswego
Dr. C. A. Sheridan.....	Oswego
Dr. J. K. Stockwell.....	Oswego
Dr. A. C. Calisch.....	Oswego
Dr. L. A. Thomas.....	Painted Post
Dr. R. W. Andrews (delivered lecture).....	Poughkeepsie
Dr. J. W. Poucher (delivered lecture).....	Poughkeepsie
Dr. F. A. Mann (delivered lecture).....	Poughkeepsie
Dr. L. H. Marks (delivered lecture).....	Poughkeepsie
Dr. Nelson Borst (delivered lecture).....	Poughkeepsie
Dr. J. H. Cotter (delivered lecture).....	Poughkeepsie
Dr. Grace M. Kimball (delivered lecture)	Poughkeepsie
Dr. A. L. Peckham (delivered lecture).....	Poughkeepsie
Dr. J. A. Card (delivered lecture).....	Poughkeepsie
Dr. L. C. Wood (delivered lecture).....	Poughkeepsie
Dr. J. H. M. Von Tilling (delivered lecture).....	Poughkeepsie
Dr. J. L. Heffron.....	Syracuse

Lectures and addresses by staff of State Department of Health	16
Lectures and addresses by staff of State Charities Aid Association	28
	<hr/>
Total addresses and lectures	384
	<hr/> <hr/>

Three meetings were held in the Polish language, two in Italian and one each in German, Albanian, Swedish and French.

Respectfully submitted,

C. W. FETHEROLF,
Director State Traveling Tuberculosis Exhibition

REPORT
OF THE
ANTITOXIN LABORATORY

[315]

REPORT OF ANTITOXIN LABORATORY

Hon. EUGENE H. PORTER, A.M., M.D., *State Commissioner of Health, Albany, N. Y.:*

SIR:— I have the honor to submit to you report of the work of the Antitoxin Laboratory for the year 1909.

The work of this portion of the laboratory services of the Department of Health herewith designated as the Antitoxin Laboratory corresponds to the group established by you in submitting the report of this year's work of the Department of Health to the Governor of this State, and is described by you in Group E of the work of the laboratory division, designated as follows: "Preparation and distribution of bacterial products, sera and therapeutic materials."

For purposes of comparision, the general statements of the activity of the antitoxin laboratory are made in tabular form corresponding to those of reports of this service in preceding years.

The total amount of diphtheria antitoxin distributed during 1909 consists of 24,429 bottles of diphtheria antitoxin of 1,500 units each or equivalent. The character and total number of places supplied during the year is shown in the following table which covers the period from 1902:

YEAR	1902	1903	1904	1905	1906	1907	1908	1909
Cities supplied	30	42	42	42	42	42	43	47
Villages supplied	161	204	} 617	691	793	828	926	{ 169
Towns supplied	171	280						
Total	362	526	659	733	835	870	969	489

Of this amount of diphtheria antitoxin, a total of 36,643,500 units, the proper form of requisition has been filled in and is duly filed for 33,925,000 units, showing a balance of 2,718,500 units of diphtheria antitoxin distributed during that year in some manner other than the usual form of signed requisition. For 16,488,000 units of this year's distribution of diphtheria antitoxin, receipts in due form have been returned to this Department and are filed. Reports of the use of 13,500,725 units of diphtheria antitoxin more or less completely filled out and signed have been for

injection was given subsequent to the second day following the first symptoms; fourteen died where the injection was subsequent to three days following the appearance of the first injection; one failed to state the day of injection, and the remainder of the fifty-four lethal cases of this series, that is to say twenty-four cases of a series of fifty-four deaths, occurred where the antitoxin injection was made subsequent to the fourth day following the first symptoms of the disease. For the purposes of comparison these data are tabulated in the form of Table VI of the report of previous years.

YEARS	DAYS OF DISEASE OF FIRST INJECTION			
	First	Second	Third	Fourth and over
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
1902.....	3.2	6.6	9.4	21.2
1903.....	1.0	2.8	10.1	15.6
1904.....	.9	4.7	10.9	16.6
1905.....	2.3	5.0	5.1	18.1
1906.....	3.6	7.1	10.0	11.4
1907.....	3.4	3.6	13.4	10.5
1908.....	3.6	8.0	9.3	16.8
1909.....	9.3	18.5	27.8	44.4

The relative amount of the distribution of 1909 with that of previous years since 1902 is shown by the following table, which is a continuation of Table II of the reports of previous years:

	Bottles
Nine months of 1902.....	6,552
Full year, 1903.....	14,121
Full year, 1904.....	16,374
Full year, 1905.....	16,308
Full year, 1906.....	17,794
Full year, 1907.....	23,629
Full year, 1908.....	25,469
Full year, 1909.....	24,429

The average potency of the serum distributed has not exceeded 370 units per cubic centimeter. The relative strength of serum issued this year, compared to that of previous years, is shown in the following table:

A considerable number of State institutions was supplied with both diphtheria and tetanus antitoxin. A total of more than 2,000,000 units of diphtheria antitoxin is reported as supplied during 1909 to State institutions, of which practically 300,000 units were supplied for purposes of immunization. Approximately, therefore, one and three-quarters million units were supplied for therapeutic use in these State institutions.

The New York State Agricultural and Industrial School at Industry, at the close of the year, was supplied with more than half a million units of diphtheria antitoxin by reason of an epidemic then prevailing, and still continuing into the next year. A similar but less severe situation occurred also in the New York State Reformatory at Elmira at the close of the year, still continuing into the next; but previous to the expiration of 1909, 150,000 units of diphtheria antitoxin had been supplied for that latter epidemic.

TETANUS ANTITOXIN

A very special effort was made by the Antitoxin Service preliminary to the accident period of the Fourth of July to supply as extensively as possible all health officers with tetanus antitoxin.

It is very noticeable that many health officers fail to keep antitoxins on hand, and tetanus antitoxin in particular; and the mortality statistics of the State from tetanus, showing 108 cases, do not indicate that a sufficiently extensive distribution or, at least, utilization of tetanus antitoxin exists.

A total of 6,369,500 units of tetanus antitoxin was distributed during the year, and requisitions to the amount of slightly over 5,000,000 units of such antitoxin are in proper form and duly filed. The form of requisition is lacking for 1,340,500 units of State antitoxin. The receipts required from such physicians as have utilized the State antitoxin are at hand and filed for 2,043,500 units of tetanus antitoxin, and reports of its use to the amount of 1,506,950 units have been received and filed.

Of actual cases of tetanus subjected to State antitoxin treatment, there are reported only 21 cases. Of these reports 6 are so deficient that the termination is unknown. Of the remaining 15, 10 deaths are reported and 5 recoveries.

REPORT
OF THE
HYGIENIC LABORATORY

[323]

REPORT OF HYGIENIC LABORATORY

Hon. EUGENE H. PORTER, M. D., *State Commissioner of Health, Albany, N. Y.:*

SIR.— I have the honor to submit to you the report of the work of the Laboratory Division of the State Department of Health for the year 1909.

The lines of work of this division are naturally grouped in: A — Educational; B — Investigations for sanitary control of potable waters and foods; C — Diagnostic examinations for determination of infectious disease and control of quarantine; D — Special investigations; E — Preparation and distribution of bacterial products, sera and therapeutic materials.

In addition to the educational work inaugurated, which is fully described in your own report of the year's work, the Bacteriologist of the Laboratory attended the meeting of the Lake Keuka Medical Association in July, contributing to their programme an address on milk and at the annual Sanitary Conference the Acting Director contributed the first scientific paper of that meeting entitled, "New Methods in Diagnosis and Treatment of Infectious Diseases," and to the course of lectures on sanitary science, delivered under the direction of this Department at Cornell University, the Acting Director also lectured on the preparation and uses of antitoxins.

Under Group B — the routine investigations for purposes of sanitary control of potable waters and foods — comes the work of the State Laboratory at Albany and its branch establishment at Ithaca and functioning since September, 1909.

During the year the public water supplies of 244 communities have been examined and in many cases repeatedly examined, according to the resources of the Laboratory and the relative necessity of such repeated investigations to more thoroughly protect a community from a polluted water supply.

During the year 1909, 1,702 analyses or other laboratory examinations of water, have been made. Of these 1,056 were bacteriological and 646 were chemical analysis of water samples.

Of the 244 public water supplies investigated, 127 were sampled and the water thereof examined and reported upon once during the year. Sixty-seven public supplies were examined twice during the year; 27 three times, and 23 four times or more. The results of the Laboratory determinations have been tabulated and are herewith submitted.

[illegible]

Frankfort	Tap, public supply	.....
Franklinville	Tap, public supply	.....
Frederick	Tap, public supply	.....
Frederick	Tap, public supply	.....
Frederick	Tap, public supply	.....
Frederick	Tap, public supply	.....
Frederick	Tap, public supply	.....
Frederick	Tap, public supply	.....
Fulton	Artesian wells	.....
Fulton	Tap, public supply	.....
Fulton	Tap, city hall, public supply	.....
Fulton	Tap, public works office	.....
Fulton	Creek near Keller Springs	.....
Fultonville	Reservoir, public supply	.....
Geneva	Tap, public supply	.....
Geneva	Well in pumping station	.....
Geneva	Pump well, public supply	.....
Geneva	Tap, public supply	.....
Geneva	Tap, public supply	.....
Geneva	Tap, public supply	.....
Geneva	Tap, public supply, express office	.....
Geneva	Tap, public supply, 673 Castle st.	.....
Geneva	Tap, 673 Castle street	.....
Glen Falls	Tap, public supply	.....
Glen Falls	Tap, public supply	.....
Glen Falls	Keenan storage reservoir	.....
Glen Falls	Wilkie storage reservoir	.....
Gloverville	Kingsboro system	.....
Gloverville	Municipal system	.....
Goshen	Tap, public supply	.....
Goshen	Tap, public supply	.....
Gouverneur	Tap, public supply	.....
Gowanda	Well, public supply	.....
Graffville	Tap, public supply	.....
Greece	Raw water from Lake Ontario, R. L. O. Water Co.	.....
Greece	Filtered water	.....
Greece	Raw water, R. & L. O. Water supply	.....
Greece	Filtered water, R. & L. O. Water supply	.....
Green Island	Raw water	.....
Green Island	Mixed effluents	.....
Green Island	West filter	.....
Green Island	East filter	.....
Green Island	Tap, No. 27 George street	.....
Green Island	Raw water	.....
Green Island	Mixed effluents	.....
Green Island	East filter	.....
Green Island	West filter	.....

• Acidity

REPORT OF HYGIENIC LABORATORY

337

[illegible]

Masona	Filtered water	
Mattawan	Tap, public supply	
Mattawan	State Hospital, artesian well No. 1	
Mattawan	State Hospital, artesian well No. 1	
Mayville	Tap, public supply	
Mayville	Tap, public supply	
Mechanicville	Tap, public supply	
Medina	Tap, public supply	
Middleburg	Tap, public supply	
Middletown	Raw water, highland source	
Middletown	Filtered water, highland source	
Middletown	Raw water, Monhagen reservoir	
Middletown	Filtered water, Monhagen reservoir	
Millbrook	Spring	
Millbrook	Driven well	
Millerton	Tap, public supply	
Millerton	Tap, public supply	
Millerton	Tap, public supply	
Mohawk	Tap, public supply	
Mohawk	Tap, public supply	
Mohawk	Tap, public supply	
Monticello	Tap, public supply	
Montour Falls	Tap, public supply	
Montour Falls	Tap, public supply	
Moers Fork	Village well, public supply	
Moravia	Public supply, north main	
Moravia	Public supply, south main	
Moravia	Public supply, depot, west end	
Moravia	Public supply, Dr. Brandow's office	
Mount Morris	Hydrant, public supply	
Mount Morris	Well about 3 miles from proposed supply	
Mount Morris	Chichester well about 3 miles from proposed new supply	
Mount Morris	Well on Chichester farm	
Mount Morris	Well No. 1	
Mount Morris	Well No. 2	
Mount Morris	Chichester well, No. 1	
Mount Morris	3 driven wells on Swan street	
Mount Morris	Well, proposed supply	
Mount Morris	— well	
Mount Vernon	Raw water, Mamaroneck river	
Mount Vernon	Filtered water, Mamaroneck station	
Mount Vernon	Raw water, Mamaroneck river	
Mount Vernon	Filtered water, Mamaroneck station	
Mount Vernon	Pelham plant, filtered water	
Mount Vernon	Raw water, Pelham filter	
Mount Vernon	Pure water well, Pelham filter	

[illegible]

REPORT OF HYGIENIC LABORATORY

[illegible]

REPORT OF HYGIENIC LABORATORY

345

Location	Service	Year	Volume	Notes
Troy	Tap, high service	2/ 8/9	4/ 2/9	Tap, probably from West Canada creek supply
Troy	Tap, low service	2/ 8/9	4/ 2/9	Tap, West Canada creek supply
Troy	Tap, high service	2/15/9	6/28/9	Tap, public supply
Troy	Tap, low service	2/15/9	6/ 9/9	Tap, public supply
Troy	Tap, high service	2/11/9	3/18/9	Tap, public supply
Troy	Tap, low service	2/11/9	4/21/9	Tap, public supply
Troy	Tap, high service	2/30/9	11/ 4/9	Pumping station No. 1
Troy	Tap, low service	2/30/9	11/ 4/9	Pumping station No. 2
Tupper Lake	Ice from Racquette pond	1/30/9	7/14/9	Public supply, new system
Tupper Lake	Ice from Racquette pond	1/30/9	7/14/9	Public supply, old system
Unadilla	Martin Brook reservoir	1/12/9	4/17/9	Tap, public supply
Unadilla	Kilbenny reservoir	1/12/9	2/25/9	Tap, public supply
Unadilla	Martin Brook system tap	5/ 2/9	6/16/9	Tap, public supply
Unadilla	Kilbenny system tap	5/ 2/9	2/29/9	Tap, public supply
Unadilla	Public supply	6/21/9	4/14/9	Tap, public supply
Unadilla	Tap, public supply	2/16/9	11/17/9	Tap, public supply
Unadilla	Tap in Consolidated Water Company's office	4/ 2/9	2/ 5/9	Dunbach's Ferry, raw water
Unadilla	Tap, probably from West Canada creek supply	4/ 2/9	2/ 5/9	Sedimentation basin
Unadilla	Tap, West Canada creek supply	6/28/9	2/ 5/9	City tap, 712 Sixteenth street
Unadilla	Tap, public supply	6/ 9/9	2/ 5/9	City tap, 712 Sixteenth street
Unadilla	Tap, public supply	3/18/9	2/12/9	Filtering area applied
Unadilla	Tap, public supply	4/21/9	2/12/9	Fair View Home, well
Unadilla	Pumping station No. 1	11/ 4/9	4/22/9	Dunbach's Ferry, raw water
Unadilla	Pumping station No. 2	11/ 4/9	4/22/9	Filtering area applied
Unadilla	Public supply, new system	7/14/9	4/22/9	City tap, Sixteenth street
Unadilla	Public supply, old system	4/17/9	6/14/9	Filtering area applied
Unadilla	Tap, public supply	2/25/9	5/24/9	City tap
Unadilla	Tap, public supply	6/16/9	5/24/9	Filtering area applied
Unadilla	Tap, public supply	2/29/9	5/24/9	City tap, 507 Sixteenth street
Unadilla	Tap, public supply	4/14/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Tap, public supply	11/17/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Dunbach's Ferry, raw water	2/ 5/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Sedimentation basin	2/ 5/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	City tap, 712 Sixteenth street	2/ 5/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	City tap, 712 Sixteenth street	2/12/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Filtering area applied	2/12/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Fair View Home, well	4/22/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Dunbach's Ferry, raw water	4/22/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Filtering area applied	4/22/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	City tap, Sixteenth street	6/14/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Filtering area applied	5/24/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	City tap	5/24/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Filtering area applied	5/24/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	City tap, 507 Sixteenth street	5/24/9	5/24/9	Dunbach's Ferry, raw water
Unadilla	Dunbach's Ferry, raw water	5/24/9	5/24/9	Dunbach's Ferry, raw water

Laboratory Diagnostic Work for 1909

MONTH	CULTURES FOR DIPHTHERIA DIAGNOSIS							
	Positive		Negative		No Growth		Total	
	1908	1909	1908	1909	1908	1909	1908	1909
January.....	50	120	61	150	13	33	124	303
February.....	87	83	82	54	9	6	178	153
March.....	84	30	68	40	6	4	158	74
April.....	60	59	44	35	6	16	110	110
May.....	58	32	23	52	6	25	87	129
June.....	32	54	35	69	4	20	71	143
July.....	31	49	45	55	3	17	79	121
August.....	32	26	27	81	7	14	66	121
September.....	61	34	53	68	9	20	123	122
October.....	52	24	45	68	12	8	109	100
November.....	85	101	129	169	13	11	227	281
December.....	109	143	123	173	33	27	265	314
Total.....	741	755	735	1,024	121	201	1,597	1,971

Laboratory Diagnostic Work for 1909 — (Continued)

MONTH	SPUTUM EXAMINATIONS							
	Positive		Negative		Unsatisfac- tory		Total	
	1908	1909	1908	1909	1908	1909	1908	1909
January.....	14	51	40	92	0	0	54	143
February.....	23	44	40	101	0	0	63	145
March.....	29	58	40	85	2	0	71	133
April.....	28	44	47	69	0	2	75	115
May.....	33	45	42	120	1	0	76	165
June.....	35	39	45	115	0	2	80	156
July.....	31	33	37	135	0	0	68	168
August.....	28	60	42	113	0	0	70	173
September.....	31	32	61	110	1	0	93	142
October.....	55	39	27	115	0	0	82	154
November.....	7	36	9	89	2	1	18	126
December.....	15	45	68	101	9	0	92	146
Total.....	339	526	498	1,245	15	5	842	1,766

disinfection necessary for the proper disposal of discharges from the typhoid patients in the household.

On visiting the place, he learned that Louis Strayley, age 7 years, had been sick since February 3d and had been treated by a physician who had not reported the case. At that time, the boy was convalescent.

About March 5th, Mary Strayley, a sister to the father of the family, came down with the fever; and about March 6th, Michael Fox, a nephew, was taken ill. He died March 22d.

Sebastian Strayley, the father, is now at the Kingston hospital with the disease; and a brother living across the river, who worked at the ice houses near the Strayley home but did not eat at their home, died but a few days ago of the same disease. I was not able to establish a definite connection between his case and those of the brother's household, as I was informed that he did not come in contact with the sick in the household nor eat food prepared at that home.

Two sources of water supply were available at the Sebastian Strayley home: The river water and water from a spring coming out of the embankment about 30 feet from the river and about 10 feet above the water level.

The spring is located about midway between two ice houses, about one-fourth of a mile apart, and at the foot of a terrace rising rather abruptly from the river towards the west. The formation is Hudson river shale, outcropping at the surface in places, and at others covered with a comparatively thin layer of gravel.

There are but two houses on this terrace, and they are one-fourth of a mile distant at an elevation of about 200 feet above the spring.

In October, 1908, a Mr. Jenny and his son, living in one of these houses, had typhoid fever. The outhouse was at that time full to overflowing, and the contents were strewn on the ground and could have been scattered by the feet of those walking about. This house is situated on a plateau and the slopes are not such that one would expect a direct surface wash down the slope to the spring. The conditions at this place have since been improved.

Dr. Van Slyke believed it possible that these conditions might have infected the spring at the foot of the terrace, but my investi

that the later cases were caused by secondary infection, either within the household or by the river water, the family's own privy and pump suction in the river acting as connecting links in the circulation.

Dr. Van Slyke gave the family instructions as to the proper methods of disinfection, and gave them over a pound of bichloride of mercury to use for this purpose but the disease had been already prevailing in the family for six weeks before the fact was brought to his notice, and we have no definite knowledge of the precautions taken previous to that time.

The geologic formation (shale rock) and the contour of the surface make it impossible to prevent the pollution of the river, either directly as at present with the shute arrangement or indirectly by seepage through crevices in the rock if an ordinary privy vault is used. The only safe way would be the use of a water tight pan closet and to empty the contents at intervals and at a place entirely remote from the suction pipe. Replacing the present arrangement by a privy of the ordinary type at a point down stream from the intake would be of little advantage, as the tide might even then carry infected water towards the intake point. Under the present conditions, the water pumped from the river at this place is dangerous and should not be used without boiling.

An analysis of the spring water showed a high count, but bacilli of the B. Coli type were present in only one inoculation.

The results do not indicate marked fecal pollution, and there is little probability of this water being infected.

Respectfully yours,

LEONARD M. WACHTER,

Sanitary Chemist

ALBANY, N. Y., April 6, 1909.

Dr. A. W. VAN SLYKE, *Town Health Officer, Corsackie, N. Y.:*

DEAR DOCTOR: — I am sending to you the report from the State Hygienic Laboratory, of the investigation of the outbreak of typhoid fever in your jurisdiction.

I understand that you have taken active measures for the prevention of the spread of the disease in so far as the matter of dis-

The entire group of buildings, including every room, cellars, kitchens, bath rooms, hospital building and other out buildings were thoroughly inspected in company with the gentlemen aforementioned.

Every point in plumbing, drainage or other possible insanitary condition of any of these buildings was looked for. The milk supply, the provisioning methods of the institution, and the entire care and routine daily methods of school room, kitchen, dining-room, laundry and dormitory were thoroughly investigated.

The methods of inspection in case of illness, the degree and promptitude of the care of the attending physicians were inquired into; and the control and the methods of quarantine in case of contagious infection also investigated.

It was found that the general sanitary condition of all of the buildings was good, and contagion by way of the milk supply or the general provisioning of the inmates was scarcely probable. The general care and method for detecting a case of contagious disease exercised in this institution were excellent, and the investigation was thus narrowed to a careful study and observation of the origin and progress of the present existing diphtheria contagion in that institution.

The cases and dates of their occurrence were plotted, and the rise, fall and persistence of diphtheria infection were thus graphically represented by a line, of which an illustration is adjoined as appendix B.

The observation of this line indicates very clearly by the periods of time elapsing between the succeeding maxima of diphtheria that the continued existence of this infection in the institution must be, by reason of transmission, by contagion between the inmates, and the nature of this graphic curve indicates that the contagious individual is most likely to be found in one released without a sufficient quarantine from the hospital of this institution; and, consequently, the efforts of this investigation were directed to a most minute inquiry and observation of the conditions at the hospital, the rules of commitment of diphtheria cases to that institution, the release and severity of the quarantine maintained in such cases.

Reference to appendix A will show you the total number of

of any nature whatever coming from the hospital — were taken from the hospital only after their thorough disinfection by a competent attendant in the hospital building itself, to which attendant all supplies were delivered at the door of the hospital through this passage way.

The entire investigation of these regulations and methods of procedure did not reveal any subject for criticism or point to any source of contagion in this direction.

It was observed, however, during the visit of your inspector that a convalescent case of diphtheria, allowed to wander in the yard about the hospital but entirely shut off from any access to the buildings or grounds where the other inmates were, had herself carried the used dishes of her lunch to a little back door joining the main building, and these dishes evidently reached the general kitchen of the establishment without any proper disinfection. The matter was immediately noted and corrected, and it was stated that it was purely accidental and could not have occurred previously, and was, in fact, a violation of the regulations established by the institution itself. It was not deemed a sufficiently flagrant or continued violation of a good quarantine to be a probable cause of the continued contagion in this institution; and careful inquiry was then instituted as to the methods of the attending physicians in instituting and releasing a quarantine.

It was found that up to the time of your inspection no bacteriological examination of the throats of any of the inmates of this institution had been made.

It was found that a commitment to hospital or subjection to quarantine had been made by merely clinical symptoms of the individuals affected, or on general indications and judgment of the attending physicians.

It was found that in no case had a release of a patient recovering from diphtheria or the release of an individual from quarantine ever been conditioned upon the bacteriological examination of the throat of such individual, and that there was no positive knowledge or indication in the hands of either of these physicians that would prompt them to state whether such released individual did or did not carry diphtheria germs in their throats when permitted to join the usual inmates of the institution.

This examination was made and is now completed. The results of this entire work are subjoined and the notes of the results will be found in the form of appendix A.

Wherever a number of cases of persistence of the diphtheria bacilli in the throats of the otherwise well inmates were found, in every case these individuals were committed to quarantine or hospital, but not before several cases of diphtheria occurred in this institution.

It will be noted that these last cases of contagion followed very closely the visit of your inspector, plainly showing that the contagion occurred before his visit. And his inquiry in that connection would indicate that these cases resulted from a manifest close association of the individuals with the first person whose throat was examined by your inspector and found to be a cause of contagion. Since this time there have been no further cases of diphtheria in the institution.

Immediately that it was found that throats of inmates allowed free circulation in the institution contained diphtheria bacilli, it was recommended by your inspector, accepted and put into thorough execution, to spray the nose, throat and naso-pharynx in the most thorough manner with cultures of the pure lactic acid bacillus (Metchinkof), with a view of thus exterminating any diphtheria bacilli existing there by the known antagonism of growth of this latter bacillus. In order to assist in these radical measures, as far as possible, the physicians and management of the Fairview Home, the State Hygienic Laboratory itself undertook the examination of all of the forementioned diphtheria throat cultures, and made and furnished this institution with the cultures of the lactic acid bacillus above mentioned. And immediately following the determination of the diphtheria contagion in the throat of the individual too prematurely discharged from quarantine, it was directed by your inspector that this individual be recommitted; and each subsequent individual found to be a source of contagion was promptly recommitted, every individual showing an outbreak of diphtheria or showing the diphtheria bacilli in its throat was immediately subjected to severe measures of quarantine or hospital care, the entire communication of the hospital building with the outside world was most carefully pre-

spector verbally October 19th that there had been no recent appearance of diphtheria in the institution; and subject to the reports on the cultures from the throats of convalescents and quarantined members of that institution, they will be released within a few days now, and the matter of this investigation will be considered terminated, subject to your further order and an unexpected continuance of this contagion in the home.

Respectfully submitted,

WILLIAM S. MAGILL, M.D.,

Director, Hygienic Laboratory

SUPPLEMENTARY REPORT

ALBANY, N. Y. *October 21, 1909.*

HON. EUGENE H. PORTER, M.D., *State Commissioner of Health,*
Albany, N. Y.:

SIR: — I herewith transmit a report of your inspector No. 7, relative to your order of September 27th last to investigate a reported continued infection of diphtheria at the Fairview Home, Watervliet, N. Y., and a supplementary report in this connection, which I take the liberty to adjoin, without your order therefor.

Your inspector examined the throats of a number of the inmates of Fairview Home, relative to a suspicion of their being carriers of diphtheria bacilli; and in the course of this examination noted a marked percentage of these inmates with very large, abnormal, adhesive or otherwise deleterious tonsils; and a number of the inmates suffering markedly from adenoid growth.

It is manifestly a difficult matter to properly cleanse and sterilize throats of such nature; and quite aside from the injury done to such individuals in allowing the continuance of such condition, it is a necessary step in the suppression of a diphtheria infection to proceed to the proper treatment of those infected throats.

It was recommended by your inspector to the authorities of the Fairview Home that steps be taken to care for these affections as promptly as possible on the ground that it would facilitate, if it were not even a necessary step for the disinfection of these throats as a possible menace of diphtheria contagion.

and subsequent information confirms the appearance that the sewer pipes were put in in the same ditch as the water pipe in Clayton and that they discharged by the same ditch into the St. Lawrence river. The intake pipe of the water system running out 670 feet into the river where the water is said to be 80 feet deep, whereas the discharge pipe of the sewer system bends down stream and discharges relatively close to the shore line.

In addition to the sewers shown on this map, reported to have been approved by this Department, there has been more recently constructed an independent but small sewer in the southwesterly portion of Clayton, emptying into the portion of the bay above stream from Clayton close to a point at which "French Creek" empties into that bay of the St. Lawrence river.

The outlet of this sewer is close to the bridge crossing "French Creek," that is shown in the map "Appendix A." This sewer has been constructed without any reference to, knowledge of, or permission from the State Department of Health. The attention of the local board of health has been called to this illegality in preceding years, but the matter has received no attention and no correction.

It is obvious from the data in your files that there has been an undue amount and constant reappearance of typhoid fever in this town for at least two years, exciting the serious attention of your Department and effort to induce steps for the improvement of this situation on the part of the local board of health of Clayton.

During the summer the sanitary condition in that town has been so unsatisfactory that you have received complaint from physicians in neighboring settlements, from citizens of this State that are summer residents in that locality and from at least two clergymen living in Clayton.

Very specific complaints and serious charges have been made that there was this summer an extensive and serious outbreak of typhoid fever in Clayton, appearing in June and extending through October, during which time there were from fifty to one hundred cases of this illness in that town, the total population of which does not exceed two thousand, and that from this disease seven to twelve cases resulted fatally.

The charge is made by responsible individuals that the physi-

cally stating, "no caution as to the use of the water has been issued," in consequence of which you telegraphed the health officer on October 7th, as follows: "Complaint received that water consumers in Clayton have not been fully advised as to boiling water. Kindly inform me as to facts and follow instructions in letter of September 27th, publishing notice to public and distributing hand bills, if none have been posted." Copy of this telegram submitted with the answer of the health officer as "Appendix E."

Under date of October 7th, the health officer of the town of Clayton, answering your telegram of the same date, distinctly states, "notice has been given in local papers."

Under date of October 9th, a clergyman resident of Clayton, referring to previous correspondence, states, "the local board of health are inactive in this matter and no information has been given to the public beyond that contained in the local papers, forwarded under separate cover. * * * Four new cases have arisen within the past week to my own knowledge and one death occurred." The copies of the local papers alluded to in the preceding sentence, contained absolutely no warning to the public relative to the water supply.

Under date of October 13th a resident of Clayton wrote you, "I trust that the State Board will be prepared to compel action. The local board of health failed to carry out the instructions of the State Board that residents should be instructed to boil all drinking water."

Subsequent letters from residents of Clayton and that neighborhood, made it manifest that the local health authorities did not have the confidence of some of the citizens of their township and specific charges were made that these local health authorities were not acting upon the instructions of your Department, although you had the assurance of that health officer, in answer to a specific charge, that he had published your warning.

To determine the truth of all of these various matters of complaint and the relative responsibility and efficiency of the parties engaged, was the object of the examination made by your inspector No. 7.

It was found that in spite of the offer and insistence upon the

least one clergyman and two physicians that two of the principal business blocks in Clayton had always discharged their sewage directly from the rear of their buildings into the St. Lawrence river, on the bank of which they stood; that this condition was perfectly well known to the members of the local board of health and to the health officer; that only within a few weeks previous — subsequent to the time of the first inspection of your Department, made by the Engineering Division and previous to the time of this actual visit of inspector No. 7 — had this illicit sewer outlet been stopped.

It may be also remarked that the discharge of sewage at this point, under conditions of current often existing in the St. Lawrence, would deposit sewage in exceedingly close proximity to the intake point of the water supply of the town.

In addition to the physicians, a prominent clergyman and other citizens of Clayton were interviewed by your inspector.

Not a single physician hesitated in the slightest in admitting that there had been more or less typhoid fever occurring in their practice since the month of June, but at the time of the visit of your inspector there were no new cases occurring and there remained only two cases of typhoid — then convalescent — that could be found.

Three of the four physicians declared that there was no malaria in Clayton, nor had there ever been. The remaining physician maintained that he had had cases of malaria and also described certain of his cases which were quite indicative of mephitic poisoning.

Every physician, however, agreed that the following could be accepted as a true statement of the sanitary condition of Clayton relative to typhoid infection, i. e., Clayton had for some years been using a water supply infected with fecal pollution; that this fecal pollution in rather permanent and somewhat large quantities had produced a somewhat inoculated typhoid condition in the majority of the inhabitants of the town.

When the quantity of fecal pollution in this water rose above the normal for preceding years, a mild typhoid condition affected a number of these people and this affection constituted the majority of the fifty to one hundred cases that had occurred this summer in Clayton. When, however, a person not using the water supply of

Although the sewer system of Clayton had been established for very many years, it was found that the sewers had never been flushed previous to the visit of the Department Engineer in September. It was found that the general establishment and enforcement of quarantine in cases of contagious diseases had for years been exceedingly lax, irregular or unjust.

A remarkable sentiment prevailed among the members of the medical profession in Clayton. Your inspector was unable to discover in any member of the profession there practicing any realization of his moral responsibility for failure to diagnose a typhoid infection, to report any such condition to this Department, or failure by such negligence to protect the health of the individuals in his community previous to this fall. It was found that three of the four practicing physicians in that community unitedly and individually refused any professional association with the fourth practitioner there. Serious charges concerning the attitude of that fourth member relative to the diagnosis, reporting and quarantining of infectious disease through him were made individually to your inspector by each of the three other physicians and will be communicated to you in a separate report if you desire.

The health officer was requested to inform this Department promptly of the appearance of any further case of typhoid fever in his district. No such notification has been received. In conclusion it appears that the charge made by a citizen of Clayton that the warning recommended by this Department had not been published in Clayton previous to October 14th, is correct. Evidence that the statement of the health officer, made on October 7th, that such publication had been made has not been found by your inspector, although every individual interviewed by him in Clayton was asked specifically for such evidence and the health officer himself was invited to submit it.

It appears that from fifty to one hundred cases of typhoid fever have occurred in that town in the period of June, 1909, to November, 1909, inclusive, and any number less than that and any cases of the actual number of cases of typhoid fever reported to this Department in that period from Clayton, represents the default of the practicing physicians there and of the health officer in that district, to comply with the conditions of the law in that respect.

It is evident that permanent buildings in the heart of Clayton

of your order to take charge of that situation, your inspector now reports.

The health officer of that district states that the first case of scarlet fever was reported to him on October 2d, and that from that time to November 5th seven cases were placed under quarantine by him.

On November 5th the health officer decided that it was necessary to close a school in his district to prevent the spread of further contagion and so ordered.

On the following day, at a meeting the board of health refused to indorse the order of its health officer or to take any measures toward the closing of that school, and also refused to take any action toward the closing of a dairy that was suspected of distributing the scarlet fever infection.

The daughter of the principal of that school had been taken with scarlet fever on October 31st and the principal of that school, the father of the child, was exceedingly rebellious to the confinement of quarantine established by the health officer.

The health officer was insistent that in the presence of this scarlet fever outbreak it was important that the principal be maintained in quarantine more than three weeks. The principal, president and the secretary of the board of education of Cornwall were exceedingly active in insisting upon such measure of quarantine and in spite of the most earnest effort and insistence of the health officer, the board of health permitted the principal to resume his duties at school at this period; and absolutely refused the most implicit demands of the health officer to forbid the principal's release from so short a quarantine.

Local agitation as a consequence of this matter produced correspondence and complaint to the State Department of Health, as a result of which an expert of the Department was sent on November 11th to examine into the situation.

Your expert reported an outbreak of scarlet fever and directly stated to you that a milkman, still suffering from scarlet fever, was supplying milk to houses in Cornwall, and that practically the original cases of scarlet fever could be directly traced to this milk supply.

As a result of this report, you instructed the health officer of Cornwall on November 13th to prevent the handling of milk by

apparent that this attitude of the local board of health was more or less directly influenced by the activity of the local officers of the board of education of Cornwall.

Underneath this whole situation it was distressingly evident that the interest and efforts of citizens of Cornwall, exemplified in the manifest actions of the officers of the board of education, had been unduly exercised to direct attention away from the possibility of contagion of this scarlet fever through the school and to antagonize every effort of the health officer to suppress at least this factor of contagion.

To fix immediately the attitude of the local board for the future, relative to any communications they might receive from your Department and to determine your future line of action relative to the health officer, your inspector requested the president and other members of the local board of health to read specified sections and articles of the Public Health Law and instructed the health officer to report to you by telegraph not later than the morning of December 7th to what extent he had been fully authorized by his local board to carry out your instructions. The telegram of this health officer, under date of December 7th, is herewith submitted, together with all of the correspondence that you referred in this matter to your inspector No. 7.

Yours very respectfully,

WILLIAM S. MAGILL, M.D.,

Director, Hygienic Laboratory

In November, 1909, as a result of conference with first the chairman, and subsequently the entire body of members of the Saratoga Reservation Commission, the complete investigation and analyses of the mineral waters of Saratoga were undertaken by your Department, and by your order the Laboratory Division was charged with this work.

Your agreement with the Saratoga Reservation Commission was made in the middle of November and the investigations undertaken by the Laboratory Division, commenced on November 19th.

A preliminary report, embodying the work done by that division up to the end of the year, was submitted to you under date of December 29th, and by you transmitted to the Saratoga Reservation Commission. Copy of this report follows:

of mineral salts to be distinctly intestinal evacuents and are quite generally distinguished as cathartic waters.

Following the first five or six of these saline waters would come in successive diminishing therapeutic value several waters, the use of which would be mildly laxative or indeed of so mild a therapeutic effect as to be merely pleasant and useful table waters.

In a large number of cases no actual exploitation of mineral springs exists and the actual exploitation of mineral waters from various springs in Saratoga does not furnish any basis correctly representing the qualities of the waters exploited; that is to say, that spring waters now exist at Saratoga unexploited, that are equal or perhaps superior to several waters from springs in Saratoga of a very great exploitation.

The majority of all of the waters of the third group are saturated with carbonic gas and some of them contain this gas under pressure. The number of these latter waters, however, has been greatly diminished and the pressure of such contain carbonic acid and consequently the quantity of contained gas is enormously diminished; possibly, by the gas pumping enterprises in actual operation in Saratoga.

It is strikingly apparent that changes in the conditions of gas pressure in the mineral water basin of Saratoga have very seriously affected the output, the conditions of flow, the relative mineralization and consequent therapeutic value of a large majority of the spring waters in the third group, and this detrimental effect is quite largely responsible for the discontinuance of exploitation of many of these springs.

The inspection now completed of all of these springs and their actual conditions of exploitation and care reveals a very general condition of neglect to develop the opportunities of these mineral springs, to protect and maintain the value of these waters when once developed and a very wide-spread lack of intelligent direction, foresight and administration on the part of the private companies or individuals controlling these waters.

The loss of flow and of gas to such a point that a number of springs have gone out of existence is a striking example of lack of intelligence and foresight alluded to. More than this, many

eral water from fecal pollution is evidenced by our analytical data thus far obtained.

Respectfully submitted,

WILLIAM S. MAGILL, M.D.,

Director, Hygienic Laboratory

LEONARD M. WACHTER,

Sanitary Chemist

Analytical Data of Water Supplies — Saratoga Spring Waters

SOURCE

Chief spring . . .
 Carlsbad spring . . .
 Geyser spring . . .
 Vichy spring . . .
 Vichy spring . . .
 Vichy spring . . .
 Original Lincoln well
 Patterson well . . .
 Star well
 Star well
 Magnetic spring . . .
 Peerless well . . .
 Eureka White Sulphur . .
 Eureka colonade . . .
 Eureka colonade
 White Sulphur spring . .
 Arcadack spring
 Arcadack spring . . .
 Beltsaer spring . . .
 Beltsaer spring . . .
 Beltsaer spring . . .
 High Rock
 High Rock
 Putnam No. 2 spring . .
 Governor
 Governor
 Emperor
 Excelsior spring . . .
 Congress spring . . .
 Congress spring . . .
 Quivac well
 Champion well
 Champion well
 Victoria tank
 Victoria tank
 Victoria spring
 New Red well
 Old Red well
 Old Red well
 Adams well
 Hathorn well
 Hathorn spring

CANCER LABORATORY

[379]

CANCER LABORATORY

BUFFALO, *February 4, 1910.*

HON. EUGENE H. PORTER, M.D., *State Commissioner of Health,
Albany, N. Y.:*

DEAR SIR:— In accordance with the provision last made for our maintenance, I have the honor to transmit herewith the Tenth Annual Report of the New York State Cancer Laboratory of the Department of Health for the year 1909.

In the Eighth and Ninth Annual Reports of this laboratory it was pointed out that experimental cancer research had reached a point where from now on we might confidently expect that the fundamental facts underlying immunity in cancer might be at any time applied to the treatment of human beings. It was also pointed out that the successful treatment of animals in the laboratory with the blood of recovered animals did not at once point the way to the treatment of human beings by an antiserum, but that the process of spontaneous recovery after inoculation with cancer was really a form of vaccination, and that processes of vaccination might ultimately be successfully and safely utilized. For this reason we asked the Legislature to increase the funds of the laboratory so that we might maintain a few patients, and undertake experiments with this end in view. Unfortunately the Legislature did not see fit to give us this means, and it is to be feared that the methods which we have pointed out as applicable will be first used in other quarters than in this laboratory, in which the method was practically originated and developed. Particularly one line of experimentation, which has been conducted in this laboratory, offers a very hopeful prospect for the application of the vaccination treatment. It has been found that in a certain form of cancer in rats, where the tumor was inoculated but once into the animal, it usually grew to a fatal termination. The course of this process could be changed by repeated inoculations at stated intervals. For instance, animals were inoculated, in ten days inoculated a second time, in ten days again a third, and in ten days more a fourth time, up to six times. The result was that as time passed each inoculation would begin to grow making its appear-

ance in sequence. When three or four of the tumors had reached a certain size, spontaneous recovery would set in and the tumors would disappear, leaving the animal immune; whereas animals inoculated with but one inoculation would by this time be carrying large tumors, and shortly after die. It thus appears that where the resistance of the animal is not sufficiently awakened by one inoculation of the tumor, this resistance can be heightened by repeated doses and, in a considerable portion of cases, immunity can be raised to a point which will bring about a cure. It is needless to point out that this process of repeated vaccination, which has cured in the proportion of twenty-five to forty in rats, might well be applied to those cases of late cancer in human beings in which surgery has nothing to offer and the outlook is hopeless. Such experiments can, of course, be undertaken only where patients are under the direct eye and control of the experimenter. If suitable quarters for such patients could be found there is no doubt that there are many who would avail themselves of the opportunity to try this treatment.

As we have pointed out from year to year, cancer in the State of New York, and, in fact, in the United States and all civilized countries, is steadily on the increase. The comparative statistics of cancer and tuberculosis in the State of New York for the last year are as follows:

	Tuberculosis	Cancer
January, 1909.....	1,169	535
February.....	1,152	521
March.....	1,362	588
April.....	1,398	566
May.....	1,256	578
June.....	1,137	582
July.....	1,126	598
August.....	1,036	575
September.....	956	619
October.....	1,087	617
November.....	1,083	597
December.....	1,186	658
	<hr/>	<hr/>
	13,948	7,034
	<hr/>	<hr/>

In the United States, from 9 per 100,000 of population in 1850, it had advanced in 1900 to 43 per 100,000, and in the registration area of the United States the increase from 1901 to 1906 per 100,000 of population is shown in the appended table:

	1901	1906
Registration area	64.5	70.8
Registration cities	65.2	75.6
Registration states	66.2	70.9
Cities in registration states	69.0	78.0
Rural part of registration states	62.7	62.6
Registration cities in other states	61.3	70.3

During the period 1901 to 1906 the distribution of cancer was as follows:

Cancer of the mouth	4,326
Cancer of the stomach and liver	51,398
Cancer of the intestines	14,934
Cancer of the female genitals	20,404
Cancer of the breast	4,683
Cancer of other and unspecified organs	32,697

It will be seen from this table that cancer of the intestinal tract, including the mouth constitutes more than half of all the cancer which afflicts mankind. It is not always possible to bring statistics regarding foreign countries down to the latest date, but Williams gives the following data for foreign countries.

Scotland, from 41.6 in 1861 to 107 in 1905.

Ireland, from 27 in 1864 to 79.3 in 1906.

Switzerland, from 114 in 1889 to 132 in 1898.

France, Paris, from 84 in 1865 to 120 in 1900.

Other cities, over 10,000 population, omitting Paris, from 76 in 1887 to 106 in 1900.

Germany, from 59 in 1872 to 71 in 1900.

Austria, from 37 in 1880 to 70 in 1900.

Hungary, from 26 in 1897 to 39 in 1903.

Italy, from 21 in 1880 to 58 in 1905.

Australia, from 14 in 1851 to 57 in 1901.

number of fish which it is necessary to examine must have added two assistants at \$75 and \$50 per month. An assistant chemist at \$1,200 and an extra laboratory boy for chemical department at \$25 a month are needed. Supplies and necessary equipment for chemical and microscopical departments will require \$2,000; maintenance of cold storage plant for refrigerating, experimental apparatus for fish, water and electricity, together will call for \$800. The beautiful building given by Mrs. W. H. Gratwick, of which the State has had the use since its erection in 1902, owing to the shortness of funds and the pressing need of utilizing every cent for research work, has fallen out of repair to a degree which can no longer be disregarded. The roof requires repairs, in many places the water leaks in through the window sills, which must be reset, and the brickwork in many parts of the building requires repointing. The woodwork and benches, owing to the severe usage of eight years of continuous service, require extensive repairs. The improvements to the lighting system in the building and the installation of an adequate telephone system are urgent necessities and for the above enumerated purposes, \$1,200 should be expended. If the work which we are doing in conjunction with the Department of Forest, Fish and Game is to be conveniently and properly handled, the laboratory should have facilities in the immediate neighborhood of Buffalo for maintaining fish for purposes of experimentation. The expense of maintaining fish in running water where the city water supply is used is prohibitive, and in the summer this cannot be done owing to the rise in temperature of the lake water. A suitable supply of spring water can be found near Buffalo, without question, and the ground around it and the right to use the water should be leased for a period. A temporary building with necessary storage troughs and other necessities should be erected and an attendant stationed on the ground. The cost of this for the first year would be \$3,000. The prosecution of this work entails investigations outside of the laboratory which necessitates traveling expenses. It has already been necessary during the past year to draw on the funds of the laboratory for repeated trips to different parts of the State for the purpose of inspecting and collecting materials. During the coming year the necessity for sending assistants to different locali-

Expenses for power and water for closed circulation and repairs to building.....	\$2,000 00
Fund for maintenance of patients for experimental work on treatment for cure of cancer in human beings	5,000 00
	<hr/>
Total	\$35,000 00
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The staff of the laboratory is practically unchanged: H. R. Gaylord, Director; G. H. A. Clowes, Consulting Chemist; C. A. Maclay, Secretary; F. W. Baeslack, Assistant in biology and histology; D. R. Averill, Assistant in photo-chemistry; F. A. Payne, Janitor, and three assistants classed as laborers.

Respectfully submitted,
HARVEY R. GAYLORD
Director

PROCEEDINGS OF NINTH ANNUAL CONFERENCE

OF

SANITARY OFFICERS OF THE STATE

[391]

CONTENTS

OPENING ADDRESSES:	PAGE
George W. Goler, M.D., Health Officer of Rochester.....	397
Charles E. Ogden, Secretary to Mayor of Rochester.....	398
Eugene H. Porter, M.D., State Commissioner of Health.....	401
ADDRESS BY WILLIAM S. MAGILL, M.D., Director of Laboratories, State Department of Health:	
“New Methods in Diagnosis and Treatment of Infectious Diseases”	406
Three diagnostic methods based upon the irritant property of tuberculin	408
Two methods of determining the existence of a tubercular infection without continued or personal observation of patient.....	411
Value and disadvantages of tuberculin as a diagnostic agent.....	406
ADDRESS BY CHARLES O. PROBST, M.D., Secretary, Ohio State Board of Health:	
“Public Health Work in Ohio”.....	415
Chief activities of the Ohio State Board of Health.....	416
Defects in rural health service.....	416
ADDRESS BY FREDERICK L. HOFFMAN, Statistician of the Prudential Life Insurance Company, Newark, N. J.:	
“Influence of Trades on Disease”.....	421
Conservation of health and strength a national problem.....	423
Disregard of physical ability or adaptability in occupation selection	422
First step in direction of a deliberate and rational policy of industrial hygiene in United States.....	428
Necessity of medical supervision of factories and medical examination and re-examination of workmen employed in dangerous pursuits	433
Social condition of women and children in United States in advance of European countries.....	423
Social and economic value of deliberate and rational measures for prevention of industrial diseases.....	435
ANNUAL ADDRESS BY EUGENE H. PORTER, M.D., State Commissioner of Health:	
“Public Health Problems”.....	442
Alcohol and health.....	61
Best index to community health is the physical welfare of school children	61
Sanitary science has become a practical science.....	443
Scope and power of a public health administration.....	444
ADDRESS BY RUSH RHEES, LL.D., President University of Rochester:	
“The People’s Interest in Public Health”.....	453
Care and control of infectious disease.....	455
Interest of public economy.....	457
Publication of statistics one of the essential features of the health office	454

ADDRESS BY D. M. TOTMAN, M.D., Health Officer, Syracuse:	PAGE
"The Work of a City Health Department".....	527
City hospital for contagious diseases.....	530
Disposition of sewage and waste.....	531
Elimination of politics.....	529
Relation of municipal and State health authorities.....	533
Unpopularity of public health work.....	527
ADDRESS BY GEORGE W. GOLER, M.D., Health Officer, Rochester:	
"The Organization of a City Health Department".....	539
Medical school inspection.....	542
Tenements	544
Vital statistics, importance of.....	539
ADDRESS BY MONTGOMERY E. LEARY, M.D., Health Officer, Town of Gates:	
"The Work of a Health Officer".....	548
Enforcement of remedies for abatement of nuisances not a responsibility of the health officer.....	555
Medical school inspection vitally necessary in the town and villages	557
Provision should be made for furnishing instruction to residents on hygiene and sanitation.....	554
Statistics should be made more accurate by securing co-operation in prompt filing by the attending physician.....	552
Tuberculosis should be handled in towns as in cities.....	554
ADDRESS BY O. J. HALLENBECK, M.D., Health Officer, Canandaigua:	
"County Sanitary Organizations".....	563
Organization of Bacteriological Laboratory at Canandaigua.....	563
ADDRESS BY WALTER A. WYMAN, M.D., Surgeon-General, United States Public Health and Marine Hospital Service:	
"What the Federal Government is Doing for Public Health"....	572
Activities of Public Health and Marine Hospital Service during the year	572
National quarantine	588
Relations to the Pharmacopoeia.....	584
Sanitary Conferences and Advisory Board.....	586
ADDRESS BY WILLIAM L. RUSSELL, M.D., Medical Inspector, Commission of Lunacy:	
"Care and Commitment of Insane Persons by Health Officers"....	592
Better co-operation necessary between State and local authorities with reference to medical needs of cases.....	597
Medical needs are frequently ignored; police methods are often unnecessary	595
Problem of insanity not solved by segregation of cases in large State institutions	597
Proposal to bring mental diseases within field of work of the health officer	592
ADDRESS BY L. L. LUMSDEN, M.D., Passed Assistant Surgeon, United States Public Health and Marine Hospital Service:	
"The Investigation of a Typhoid Epidemic".....	599
Different types of typhoid fever situations presented for study....	603
Importance of the typhoid fever problem in the United States....	599
Method of investigation.....	603
Nature and source of the infection.....	601
Typhoid situation in Washington, D. C.....	604

	PAGE
ADDRESS BY CRESSY L. WILBUR, M.D., Chief Statistician, United States Census Bureau:	
Condition of demography in the United States.....	618
Loss to the citizen and to sanitation from neglect of vital statistics	620
National importance of thorough registration of births in New York	622
Vital statistics and demography.....	616
ADDRESS BY DANIEL R. LUCAS, M.D., New York City:	
"Benzoate of Soda in Food".....	631
Effects on micro-organisms.....	634
Effects on men.....	636
Inhibiting action of a given amount of benzoic acid in combined form, e.g., sodium benzoate—Weaker than when benzoic is free	633
Sodium benzoate a poor preservative under some conditions.....	645
ADDRESS BY PROF. H. A. HARDING, Geneva:	
"The Control of a Milk Supply".....	650
Health departments of New York and Rochester pioneers in this work	651
How shall we control the milk supply of small cities.....	650
Things to remember if we are to guide the milk business of our communities into higher and cleaner channels.....	651
ADDRESS BY F. PARKE LEWIS, M.D., Buffalo:	
The prevention of ophthalmia neonatorum.....	663
Are these infections of such frequency and is resultant blindness so common as to warrant the movement of State and Nation for its control.....	665
Employment of right thing, at right time, in right way, means seeing eyes	663
Importance of co-operation between medical men of the State and the Health Department.....	672
Wider knowledge necessary concerning the cause of birth infection	671
Delegates in attendance.....	674

Proceedings of the Ninth Annual Conference of Sanitary Officers of the State of New York, Convention Hall, Rochester, November 10-12, 1909

The Conference was called to order by George W. Goler, M.D., Health Officer of the city of Rochester, Wednesday, November 10, 1909, at 2:30 p. m.

OPENING ADDRESS BY DR. GOLER

I am sure on behalf of the Health Bureau, I am glad to extend to all of my fellow sanitarians a most hearty welcome to Rochester. I think we have only to look at the program which has been presented for our consideration, to extend our thanks to Dr. Porter, for the distinguished men he has succeeded in bringing here to discuss these questions before us.

Not only are we to hear these visiting sanitarians, but we are also to take part in this congress ourselves, and through the reading of the papers and the discussion, we are to find out the newer ways for the prevention of disease, and the road to health.

You know, to-day, we are not only interested in perfecting the data of disease, but we are interested in finding the way to health; so that as time goes on we may realize, as Pasteur said, that it is within the province of man to banish infectious diseases from the face of the earth.

Again, I bid you hearty welcome.

I have again the pleasure of introducing, in the absence of his honor, the mayor, one who is chosen to extend the greeting of the city of Rochester, and he will come in his three-fold capacity, in his own person, and as the representative of the mayor, and as the secretary of the mayor: I take great pleasure in presenting Mr. Charles E. Ogden, secretary to his honor, Mayor Hiram H. Edgerton, of Rochester.

that in the reduction of diphtheria and typhoid that government has played its very important part. Therefore, the government of the city of Rochester, enveloped as it is in the health bureau of which it is justly proud, is very glad to have you folk here, that we may learn, and that you may give us an uplift along these truly important lines, in the affairs of our city, and in the affairs of all mankind.

We are not afraid of you at all. We have measured up the probability of your painting the town red, and we have decided that we are not afraid. We are not afraid of your theories; we are not afraid of your highest looks into the future; we are not afraid of your enterprise, for Rochester at present is in the halo of glory of its own enterprises, and it is especially triumphant in its commercial, industrial and business life. But while it is expanding and broadening, it does not wish to forget for a moment, its indebtedness to the higher walks of life; and to philanthropy in its broadest and best sense.

Rochester, as we believe, is the most beautiful and the most ideal city in the world. Rochester is progressing and expanding; and is proud as proud can be of its location, of its business, of its enterprises, of its health, of all that goes to make a city large, beautiful and fruitful to live in.

Now, you see how swelled up we are in regard to Rochester. But, Rochester wants to be proud of its hospitality; and it wants you to feel that you are at home; and that it is our business to make you feel at home, and to give you a welcome in every sense of the term. We extend to you the freedom of the city. I do not know what that means exactly, but we extend it to you nevertheless. Let me implore you to make the most of it. And we have a little motto here, "Do it for Rochester." We are trying to do everybody for Rochester. We will make the same attempt upon you, but, get back at us and "do" Rochester for all it is worth.

And in behalf of the mayor of this municipality and in behalf of the health association, and in behalf of all the citizens of Rochester, I again extend to you the heartiest, happiest sort of a welcome that it is possible for me to do and to wish for you great

results from your deliberations, and a period of genuine enjoyment while you are within our borders.

THE CHAIRMAN — Gentlemen, I think in response to what Mr. Ogden has said, we may say to him that we will "do" Rochester for its health's sake if in no other direction.

And now, I am like one of the Ephemerides, that lives but for a brief period. I have had my moment, or my hour of pride. I simply take the toga of presiding officer from my shoulders, and place it upon one who has made the Health Department of the State of New York take its place among the States of the Nation, Dr. Eugene H. Porter, the Commissioner of Health of the State of New York.

REPLY BY DR. PORTER

MR. CHAIRMAN, MR. SECRETARY AND FELLOW SANITARIANS — I always feel when this portion of the program is reached, where welcoming addresses are given and appropriate and of course felicitous replies are expected, and it devolves upon me to take part in such pleasant exercises, I am always reminded of the story of the little boy who was sent by his mother to invite a woman friend to tea. The boy had evidently heard some conversation at home regarding the status of this to-be invited guest, and so he said to her, "Ma would like to have you come over to tea at four o'clock this afternoon, and have it over."

But, really, while the ordinary messages of greeting are without any further significance than that given by the courtesy which prompts the speech, there is something in our welcome here this afternoon, it seems to me, that might fittingly require a few words in reply.

It is not in this beautiful hall where we are gathered, nor in the audiences that may hereafter assemble during the sessions of this Convention; nor in this kindly and eloquent speech to which we have listened, that we must seek for the deepest significance and meaning of our reception in this city of Rochester. Underlying all, and as a foundation for all, lies the splendid work, the splendid sanitary work done by the city of Rochester. And it is that which gives such a fitting and fixed significance to this reception.

Rochester has entered upon the road of sanitary education, enlightenment and progress. In her work is beginning to be illustrated the truth that sanitation concerns itself with all the affairs of men. In the work of the mayor and the common council of Rochester, in the efforts of the chamber of commerce, with its hundreds of active and intelligent members, in the work of the health officer and public health association, and in the work of many private citizens, we find advancing in Rochester a spirit of intelligent, comprehensive, sympathetic understanding of the development of sanitation, which is lacking in many of the towns of our State; and so in this welcome we come to the realization that our fellow citizens are beginning to recognize that the threads of

we must endeavor to make short visits, and crowd in as much as we can in a limited period.

Here is a tentative program: These courses will be held at Albany, Staten Island and Ithaca. They will be held throughout the year. Their duration will be five days, from Tuesdays to Saturdays.

Now, that will not interfere with any one of you coming to Albany or going to Staten Island or to Ithaca, arriving one day and leaving the next day. If we are unable to give you the full course, we will give what we can; so, while, if you could stay the five days, we could complete the course laid out, yet do not hesitate to come because you cannot stay the full time. If you can give one, two or three days, you will be as welcome as if you came to stay the entire time.

There will be some lectures on inspection, establishing and controlling a quarantine, vaccination, disinfection, and so forth. There will be laboratory courses daily, morning and afternoon.

Under the first heading, we have the following:

1 Sanitary examination of water

a Field survey

b Where and how to collect samples

c Care of samples in transit

d Determination of physical properties

e Chemical analysis — methods and applications

f Bacteriological analysis

g Demonstration and exercises in the interpretation of the results of water analysis

2 Clinical microscopy

a A short exercise in general bacteriology

b Making and use of usual culture media

c Preparation and inoculation of cultures for diagnosis

d Preparation and use of bacterial stains

e Isolation of specific germs from a mixed culture

f Preparation of slides, smears and swabs for work in diagnosis of microbes

3 Diagnosis of blood

a Methods of collecting, preserving and transmitting blood

b Use of the centrifuge, cryoscope and hemoglobinometer

It is with no inconsiderable degree of pleasure that I introduce to you now, Dr. William S. Magill, the new director of the laboratory work in the State Department of Health, who will present the subject: "New Methods in Diagnosis and Treatment of Infectious Diseases." Dr. Magill comes to us with a large experience in this country, and with a still larger experience abroad, and with diplomas from Paris and Berlin. Bringing all his experience in practical work to us, I believe that under Dr. Magill's administration, the laboratory of the Department of Health of the State of New York will enter upon a career, where it should be placed, namely, in the front rank; and that the work done, both routine and research, will cause it to stand by such laboratories as those of the State Board of Health of Massachusetts.

DR. WILLIAM S. MAGILL — The Commissioner has made my task more difficult by his very pleasant introduction, which I hope I may merit.

the establishment of such infection in the organism, and throughout the entire duration of the organic resistance to invasion.

A characteristic rise in temperature subsequent to injection of tuberculin is quite positive evidence of tubercular infection of the organism tested. The failure of this reaction is not evidence of the nonexistence of such infection; but in general terms it can be said that the cases in which such failures are possible are limited to at least one in ten. Such a failure is generally due to the fact that the infected organism is so exhausted as to be no longer reactive. In such cases of course the clinical symptoms of tuberculosis are not deficient.

The studies of the rise in temperature of the infected subject tested by tuberculin have shown that this tubercular affection provokes a marked hypersensibility of its victim to manifest high temperature on slight provocation.

Based on this susceptibility to heighten temperature two methods of diagnosis are now used.

Often, at the first onset of tubercular invasion, it will be found that the muscular and mental activities of the day's work are sufficient to provoke in the infected individual a slight rise of body temperature above the normal during the late afternoon or evening. This fact is of ancient clinical observation and use in the early diagnosis of tuberculosis.

It is developed into a method of diagnosis when a suspected individual is directed to take moderate exercise for half an hour or more, with hourly observation of his subsequent temperature. A rise above the normal is strongly indicative of the existence of infection, if found to be a constant phenomenon under such conditions.

The second diagnostic method, based upon this characteristic rise in temperature, is widely used in France and seems to be of well proven reliability. It is based on the particular susceptibility of tubercular subjects, even in the earliest stages, to any dose of iodine.

The method consists in administering to a suspected subject a relatively small dose of iodide of potassium and carefully observing the temperature of the ensuing twenty-four hours. If the subject be infected with tuberculosis, a marked rise of tem-

These methods are alike in fundamental principles and approach each other in the value of their results for the remarkably early diagnosis of any organism reacting to tubercular infection. They differ merely in minor details and in the technique of the several diagnostic methods, as indicated by the name applied to each.

The conjunctival reaction is obtained when one drop of a one per cent. solution of well chosen tuberculin is cautiously instilled upon the temporarily inverted conjunctiva of an individual organically reacting to tubercular infection. Under proper conditions this reaction is shown by the intense reddening of the seat of instillation within a few hours, persisting from one to several days thereafter in practically all such infected individuals. The reddening of the thus instilled conjunctiva of a normal nontubercular individual is practically never observed.

Objection to the use of the conjunctival method is made by a claim that cases of serious complication of ocular tissues have resulted. One such case, about which a great deal was said and published in New York was found quite unfounded by the personal investigation of this writer. The men who have most thoroughly investigated this method — Wolff-Eisner and Calmette — and used it in very many thousands of cases, are strong in their showing that there is practically no harmful result to be feared in any case suitably subjected to the conjunctival test.

The enormous number of individuals examined by this conjunctival method in the hands of most expert observers has already permitted the collection of clinical data for establishing the use of this method, not only for diagnostic, but also prognostic purposes.

In speaking of this reaction it becomes my duty to point out a grave fault in many writings on this subject. The reaction is often referred to as the "Calmette Reaction" on account of the propaganda and use made of the reaction by that authority. Apparently no writer who criticises the reaction as dangerous has ever taken the trouble to know what the so-named reaction really was, for I have found one who appeared to know what sort of tuberculin Calmette used — a very vital point of this test if it is to be criticised as dangerous.

of any standing. This may account for the very great rapidity of their spread into most extensive and very general use.

A French authority recently pointed out the ease with which this same line of investigation could be carried out by the simple application of a drop of the one per cent. solution of chosen tuberculin to any suitably prominent nasal turbinate or pharyngo-nasal mucosa. In this case a marked hyperemia of the point touched with the reagent, rapidly develops and persists at least thirty-six hours in the individuals reacting to tuberculosis infection.

In the use of provoked high temperature, the conjunctival, or the cutaneous, reactions to tuberculin, it is scarcely probable that the individual submitted for such method of diagnosis will remain in ignorance of its import and nature. The positive reaction to such tests is most patent to such individual and must reveal to him this ill omen.

To avoid the liability of the patient's inevitable observation of a positive diagnostic conjunctival, cutaneous or temperature reaction, it has seemed of great advantage to use the pharyngo-nasal mucosa for the chosen site for this sort of tuberculin application and observance of reaction. I have followed this as a method of procedure at my clinic at the New York Nose, Throat and Lung Hospital for more than a year with most satisfactory results. There is no difficulty of application of the reagent nor observation of any consequent reaction. The patient has no knowledge of the operation nor of its consequences. A long continued control of these cases by either a conjunctival or cutaneous test demonstrated the uniformity of results.

All of the preceding methods of diagnosis of tuberculosis involve the provoking of a phenomenon to be noted only by more or less constant and personal observation of the suspected individual. Such methods are inapplicable for long distance control.

Two methods of determining the existence of a tubercular infection without continued or personal observation of the patient have been employed and are proving their claims.

The first method in point of time is based upon the well-known Pfeiffer serum reaction, which was the precursor of the Widal test, now so universally used. You will recall the fundamental principle of that reaction, as established by the clinical observa-

index of the organic resistance. In this case the accurate determination of the amount by this method permits the exact measure of the state of infection at any given time. The degree of resistance being then known, an exact method for prognosis, as well as diagnosis, is here available and what is of far reaching import in medicine: a new power is placed in our hands when this method fulfills its promise; for by such accurate determination of a correct index of the progress of a disease we have for the first time a source of accurate knowledge and control of therapeutic efficiency.

The similitude of underlying factors involved in this work of Calmette and that which is bearing such ample fruit in the subject of hemolysis is striking, and leads at once to the next line of diagnostic work, the serum diagnosis of syphilis.

Our limit of time only permits the mention of the easy and positive demonstration of the specific microbe of syphilis, which we possess for a diagnostic method of any suspected tissue, and the very simple and practical method used by Noguchi, whereby a minute portion of blood or serum of any suspected case can be sent to great distances for a diagnosis of very great reliability which can be made in the laboratory in two hours' time. The value of this serum test is by no means limited to its use in diagnosis; for here, too, appears this new power in medicine which I have mentioned. By this method of serum test a positive knowledge of the state of the disease and an accurate measure of therapeutic efficiency is in our hands.

I must reserve for a future opportunity the demonstration of the resources of blood examination to show the onset of a diabetes long before any clinical symptoms of glycosuria, or to absolutely determine by a single examination any doubtful diagnosis of small-pox. But I must mention the power which the developed methods of cryoscopy have given us to foresee, forestall or control the critical periods of insufficient renal functions with consequently developing toxemia and our ability to accurately determine the degree of such impairment and select the impaired kidney.

Few realize the ease with which an examination of the blood will permit a diagnosis of pus formation in cases of pleuritis, appendicitis or cholecystitis and similar affections. The val-

PUBLIC HEALTH WORK IN OHIO

BY CHARLES O. PROBST, M.D.

Secretary Ohio State Board of Health.

I presume that we are doing little or nothing along health lines in Ohio that you are not doing equally as well or better yourselves. Probably the difficulties we encounter in trying to extend and better our work you, too, have to meet. It is always helpful, however, to exchange experiences, and possibly in telling you something of our work and our hopes, plans and failures, something may be evolved in the discussion that will be useful to all of us.

Ohio is one of the largest states of our middlewest country. The territory is mostly flat or rolling with no mountains, and most of the land is under cultivation. Our interior streams are small, and much of the soil is of a clayey nature.

These topographical features have much to do with our sanitary problems as will be seen further on.

Our population is mostly native born, though we have quite a number of foreigners in our large cities, and there is a considerable sprinkling of blacks.

The State is divided into 88 counties and 1,360 townships. We have 69 cities, i. e., municipalities of 5,000 inhabitants or over, and 703 villages, or communities of anything less than 5,000.

Our health service consists of a State Board of Health of seven members and a secretary; and of local boards of health and health officers. Our cities have boards of health of five members and a health officer, but by a political trick, which has been very harmful, the Health Act was amended so that boards of public service may act as a board of health. Boards of public service have charge of all the city's affairs except the police and fire departments, and have little knowledge of health matters. This amendment was made solely to play political favorites and has been taken advantage of by many municipal authorities for that purpose.

In villages there may be either a board of health of five members or a health officer in lieu of a board of health, appointed by council but approved by the State Board of Health. In the

as we have no large uninhabited watersheds. As the result of these physical conditions the question of water and sewage purification has become of vital importance to us.

Seventeen years ago, by a fortunate circumstance and not from any provision on the part of our legislators we secured an act requiring that all plans for waterworks or sewerage, or for changes in either, must be approved by the State Board of Health.

The fortunate circumstance alluded to is this. In 1892 Hamburg was having its epidemic of cholera and a reported case in New York City created great public excitement. Taking advantage of this we rewrote our entire Health Act and introduced the bill in the Legislature then in session. The bill was a long one; no one read it; every one said "It's to prevent cholera," and so it was amended, without objections, so as to give our board the authority above referred to.

This power has been judiciously used. Although there is no direct penalty for violation of the act, it has been ignored in comparatively few instances, and, I am glad to say, by no city of any considerable size.

Under its provisions we have examined and passed upon 245 plans for waterworks and 303 for sewerage. By coercion, persuasion, or both, we have since the passage of this act secured the introduction of 43 municipal water purification plants and of 133 sewage purification works.

This work has built up our engineering department. From one engineer, whom we were unable to employ from lack of funds until 1898, we have grown to a department of four engineers and five assistants. With this help we have made rather complete sanitary surveys of all our streams, and a detailed study of all our water and sewage purification works.

We have been led by this in other directions than sewage. Many of our streams are polluted by industrial wastes. It has been our policy to aid manufacturers in finding proper ways for disposing of these. To this end we have and are carrying out continued experiments in waste disposal.

We found a way for drying by evaporation distillery slops and utilizing them for cattle feed, thus removing a nuisance and giving a handsome profit besides. We did similar work, but not so

One feature of this bill I will speak of briefly. Under its provisions an inspector may go into any community where a dangerous communicable disease has appeared, and if the local authorities refuse or fail to promptly enforce proper restrictive measures he may assume charge, appoint deputies and create any necessary expense. This must be paid by the local authorities and the Attorney-General may sue and collect the amount from the community that failed to act.

The educational work in regard to the prevention of communicable diseases by the usual means of circulars, bulletins, lectures, etc., has not been neglected.

Only one other feature of our work will be mentioned for fear of becoming tedious. In 1886 there were not more than 25 or 30 local boards of health in the State.

It was simply permissive with councils of cities and villages to establish such boards. No provision was made for the rural districts. Through legislation secured by the State Board of Health we now have 2,124 boards of health or health officers acting in lieu of a board of health.

Politics, and lack of public interest in, or appreciation of the importance of, the work of local health officers has been and still is our greatest handicap to effective health work. Except in our large cities the salaries paid to health officers are still ridiculously inadequate.

It is a discouraging fact that those charged with the two most important functions of the State—the education of the child and the protection of the public health—are its poorest paid servants. Had it not been that health work has been largely a labor of love, and that thousands of medical men have given their best efforts to protect the public against needless disease without thought of compensation, health conditions in Ohio, as in all the other states, would be vastly worse to-day than they are.

There is evidence of a coming change in these conditions. An eminent sociological worker from your State, at the recent meeting of the American Public Health Association, ventured the prediction that in ten years the health department would be generally regarded as the most important division of municipal government. Our advanced thinkers are beginning to realize

INFLUENCE OF TRADES ON DISEASE

BY FREDERICK L. HOFFMAN

Statistician of the Prudential Life Insurance Company, Newark, N. J.

Industrial hygiene has for its object the physical well-being of working people, and its sphere is practically all-inclusive of what is comprehended in the industrial system. It is only within very recent years that the vast importance of this branch of preventive medicine has been clearly recognized by the medical profession as a practical problem, but the public interest in the subject has been less active in the United States than in England, France, Germany and other countries. In part this backward condition is the result of the rather exceptional and more favorable social condition of American labor, necessitating a lesser degree of drastic state interference than has been found necessary in the older countries of the world. Most of our factories and workshops are of comparatively recent construction and they have, as a rule, been built with a fair regard to modern standards of light, air and ventilation. As the result of the concentration of industry, many of the older factories have gone out of use or have been rebuilt in harmony with more modern requirements. The better wages, the shorter hours, and the higher standard of living of American labor have also very largely contributed to bring about a better physical condition of wage-earners than is met with in European countries.

It is a readily observed fact of general experience that however intimate the connection of occupational activity may be with the resulting injury to health and life, the problem is enormously complicated by other causes and conditions affecting the general physical well-being of the people. Where wages are comparatively high better food can be furnished, better housing can be secured, more rest and recreation can be had, and in the event of illness better medical attendance is possible, than where the opposite economic conditions prevail. Hence the injurious effects of certain industrial conditions are less serious among a people econo-

prove that women must not be employed at work which is beyond their physical strength, or at night, or underground, but only during recent years has legal sanction been given to humanitarian considerations which forbid the employment of women and children in unsuitable pursuits. The fact, however, cannot be gainsaid that the proportion of women in industry is rapidly increasing and that they follow a large number of employments to which, because of their sex, they are not properly adapted, and which, therefore, require statutory regulation, at least as to hours of labor, and the statutory prohibition of night work and work underground.

The United States, in the social condition of its women and children, is immeasurably in advance of European countries, where of bitter necessity they are often employed at arduous or unhealthful occupations at which they have rarely, or never, been employed in this country. Women, with us, have never been employed in mines, at heavy work in potteries, at unloading of vessels, or similar unsuitable tasks. Our respect for women revolts at the thought of even the remote possibility that they may perform heavy manual work as a necessary consequence of an independent struggle for existence. Children have been exploited to a very considerable extent in all countries, but happily indeed, the modern conscience is awakening to social responsibility in this matter and a recognition of the incontrovertible truth that the children are, in fact, the most valuable asset of a nation. At the same time, in the case of both women and children the economic condition of the nation is not such that they can be entirely relieved from their respective share in participating in the industrial processes by which the life of the community is carried on, and even the wealthiest of nations in modern times cannot relieve a large proportion of its women and children from the necessity of active work at tasks suitable to their sex and strength.

The conservation of health and strength is a national problem of far-reaching importance and particularly so in the case of industrial nations which are actively engaged in the struggle for international commercial supremacy. Industrial efficiency is fostered and advanced by the best possible conditions suitable to health and life, and by a most rigid obedience to the principles

and children as the result of impaired efficiency and premature incapacity for work, is so great a burden upon the nation that if it could be even approximately calculated it would stagger the dullest imagination and call for an aroused conscience of mankind to demand a change.

It is, therefore, not without economic and ethical justification that all modern civilized nations have deliberately undertaken the improvement of the conditions under which industrial activity is carried on and the gradual but certain removal of conditions decidedly inimical to the health of the working people. Since the effects of most of these conditions are generally slow in their operation and most insidious in the manner in which health and strength are gradually undermined, the human machine in its imperfect working is neglected, while the mechanical machine receives abundant care and is further perfected in minute detail with remarkable ingenuity. But the wear and tear on the human machine is much more pronounced and serious than in the case of the mechanical machine, since the former is a vastly more complicated and delicate organism than the latter. In the former the parts or the organs which are worn out or injured cannot be taken out or replaced by new organs or parts, as is the case in the mechanical machine, but they are lost forever and human life is correspondingly shortened and terminated at an age often many years before its natural or normal end.

There can be no doubt, however, that mortality has diminished and that there has been a decrease in morbidity, but both mortality and morbidity, among certain classes of wage-earners, are still decidedly above the average, and of no disease is this more true than of consumption. Every trade in which there is exposure to the continuous and considerable inhalation of dust should be made a matter of government concern, so that the factors and conditions inimical to health and life may be reduced to a minimum. At present this is not the case in hardly a single one of the numerous employments in which the death rate from tubercular or respiratory diseases is above the average, and only a beginning has been made in calling public attention to the facts. Small hope can be held out for success in the humane effort to diminish the ravages of tubercular diseases until the evil is attacked in its origin, and pre-

ventitive measures are generally adopted to effectively protect the health of women and children in industrial pursuits. Only a few illustrations are necessary to emphasize the impressive and far-reaching truth of this assertion.

Among men employed in occupations with exposure to metallic dust, at ages 15-24 the proportion of deaths from consumption is 46.5 per cent., at ages 25-34 it is 57.2 per cent., at ages 35-44 it is 42.4 per cent., and at ages 45-54 it is 23.4 per cent. Somewhat similar, though not quite so serious, are the facts regarding men employed in occupations with exposure to mineral dust, which at ages 15-24 causes a mortality from consumption of 31.7 per cent., at ages 25-34 of 47.6 per cent., at 35-44 of 36.3 per cent., and at ages 45-54 of 27.9 per cent. The facts for certain specific occupations are still more serious and alarming. Considering only grinders, the proportion of deaths from consumption at ages 25-34 is 70.8 per cent, against 31.3 per cent. for men in all occupations. That percentage itself is decidedly too high, the excess resulting naturally from the large proportion of persons employed in occupations with a mortality from consumption above the average. Thus among farmers and planters, according to the census mortality statistics for 1908, the percentage of deaths from consumption at ages 25-34 years was only 25.6 per cent. against 35.9 per cent. for draymen and hackmen, 41.2 per cent. for tailors, 42.9 per cent. for plumbers, and 49.2 per cent. for compositors, printers and pressmen.

Facts like these, which cannot be gainsaid, and which are incontrovertible since they are sustained by every qualified investigation into the vital statistics of different trades, emphasize the duty of government and private enterprises to leave nothing undone to reduce the disease liability to the minimum. In particular, however, do these facts emphasize the duty of the medical profession to specialize in the field of industrial medicine and to follow European examples by perfecting the study of disease predisposition in recognized unhealthful trades. While much can be done by preventive medicine there must always remain a large field for the specialist in occupational diseases who shall select for his field recognized unhealthful trades or recognized ill-health pro-

ducing factors seriously affecting the different parts of the human organism to the decided detriment of the body as a whole.

As yet this field is practically neglected in the United States. No qualified and comprehensive treatise on occupational diseases has been written by an American authority, and the fragmentary contributions only emphasize the deplorable neglect of one of the most promising fields in modern medicine. The really valuable literature on occupational diseases is almost entirely foreign, and foremost among the works in English which are deserving of painstaking study are the contributions by the late Dr. Arlidge and the more recent works by Sir Thomas Oliver. While these two writers have taken the whole domain of industrial medicine for their respective fields, there is a numerous body of faithful workers who have specialized in particular fields. I may mention among others the researches with regard to arsenic, by Dr. Malcolm Morris; the effect of employment in ganister crushing, by Hamilton P. Smith; the effect of steel grinding by Sinclair White; the dangers in the use of mercury and its salts, by Dr. T. M. Legge; the effects of employment in the manufacture and handling of copper and brass, by Dr. R. M. Simon; the disease liability in the manufacture of high explosives, by Dr. R. P. White; the dangers of employment in chemical trades, by A. P. Laurie, M. A.; the dangers of working in jute, by Harry J. Wilson; the employment in laundries, by Lucy A. E. Deane; the danger of flax and linen manufacture, by Dr. Purdon; the hygiene of cotton manufacture, by James Wheatley; and many similar researches, most of which have been brought together in a single volume under the title "Dangerous Trades," by Sir Thomas Oliver, who himself has contributed many valuable special articles, in particular on the disease liability in match manufacture, and the dangers of working in lead and its various compounds.

Even more numerous and valuable are the contributions by German authorities on occupational mortality, largely resulting from the duty imposed upon German industry by the government insurance system. The most authoritative treatise on the subject is a handbook on the diseases of workingmen, edited by Dr. Theodore Weyl, who himself has made many and highly specialized inquiries into particular trade diseases. In this work tl

present time. Only through such supervision can the experience be gained, which in its nature must extend over many years to trace with unerring accuracy the true incidence of disease-causing conditions, which are, as a rule, extremely slow in their effects on the human organism and which ordinarily escape attention. The facts of most importance are, therefore, rarely made a matter of official record. Only by such medical supervision will death certification be gradually improved so that the actual occupation of the deceased, as well as the true cause of death, shall be recorded, and if the facts warrant it, be brought to public attention. Under the present method of death certification there is no question of doubt that some of the most important facts bearing upon problems of industrial hygiene are not made a matter of official record, since in the classification of deaths preference is of necessity given to the immediate rather than to the remote cause of death. This, for illustration, explains why we have so few recorded deaths from fibroid phthisis, which is a true occupational disease, or from lead poisoning, which is often the remote cause of deaths recorded as due to kidney, liver and other diseases.

Medical supervision of factories would be productive of substantial good in other and even more important directions in that qualified medical advice would suggest remedial measures for the improvement of ventilation, the securing of better light and air conditions, the effective removal of industrial dust, and the mitigation of evils arising out of the presence of noxious fumes, vapors, etc. All these matters are extremely complex in their inter-relation and they involve perplexing problems to the employer as well as to the State. Manifestly State interference with industry must proceed upon extremely cautious lines so that the industrial activity itself is not seriously hindered, since its abrogation would be an even greater calamity than premature disease and death to some of the workers themselves. At the same time, however, in the light of a vast experience the truth cannot be denied that very considerable improvements are possible without much cost or hindrance to industry itself. In fact, most of the evidence which is available proves conclusively that the benefits resulting to various industries from the improvement of the health of employees by the introduction of methods or conditions under which

evil effects of exposure to industrial dust or to industrial poisons to the minimum. If an effective method of medical supervision of factory conditions and the health of factory workers produced no results other than these, the system would fully justify itself.

Other detrimental conditions to health in industry include physical and mental overstrain, excessively repeated muscular action, and bodily fatigue, which is made manifest in the higher degree of accident frequency in the afternoon than during the morning hours of work. Overstrain, or overlifting of heavy burdens, is not done away with even where machinery is extensively used and cases of hernia are still distressingly frequent, but the extent of internal injury is not a matter of official record. Among boiler makers and riveters, as the result of the general use of automatic riveting machines, we meet with serious consequences resulting from the effects of concussion of the air, but the actual extent to which workmen of this class are affected is not at present a matter of record. The modern development of tunnel and underground construction has largely increased the number of workmen exposed to the dangers of compressed air, corresponding in part to the well-known risks attending the occupation of divers, who as much as any class of men are exposed to conditions detrimental to health. These are but brief illustrations of the dangers which surround the modern workman and which have resulted in quite different disease and accident risks in industry from the corresponding risks and conditions of an earlier date. Over most of these conditions the workman himself has but a very slight degree of actual control, and while a decided improvement is possible by the intelligent co-operation of master and workman, the fact remains that the consequences to health and life fall upon the employee alone.

Every occupation, however, furnishes a field of profitable medical inquiry, for the ramifications of modern industry and the manner in which industrial operations react upon the health and lifetime of the workman are practically endless. Of no employments is this probably more true than of the large group of workers exposed to gases, vapors, high temperatures, etc. While much has been written regarding the liability of underground miners to accidents from explosion, very little indeed is known with ac-

should be provided for the men to wash in, and the workshops themselves should be thoroughly cleaned at least once a year. The workmen should be provided with milk as a prophylactic as well as curative agent against the various kinds of industrial poisoning to which they are continually exposed. The use of respirators may no doubt very often be inconvenient, but it should nevertheless be insisted upon as perhaps the most effective safeguard against the inhalation of noxious vapors, fumes, gases, and injurious dust.

The very complexity of the subject precludes its adequate consideration by the layman, but the mere outline of general industrial conditions injurious to health and life re-emphasizes the necessity of medical supervision of factories and the medical examination and re-examination of workmen employed in dangerous pursuits. Every trade from the indoor or sedentary occupations to the outdoor life of the farmer and the hunter's guide presents peculiar occupational dangers which have their medical as well as social aspect, demanding the practical interest of all who are interested in the well-being of their fellowmen. Any single occupation selected for the purpose of illustration would perhaps more clearly bring out the salient factors which demand consideration, but no occupation presents dangers and conditions which are exactly typical of the whole. Perhaps the most serious consequence to health in industry is industrial dust, and if anywhere State interference is warranted it is in the intelligent regulation of industrial processes giving rise to dust inimical to health.

Every trade, however, requires separate and distinct consideration, and accordingly the rules and regulations adopted by foreign governments for industrial disease prevention vary, since they arise out of the conditions themselves under which industry is carried on. The elaborate rules adopted by German industrial accident associations for the prevention of injuries, and the corresponding rules adopted by sickness associations for the prevention of industrial diseases, are deserving of careful study as perhaps the most effective measures designed to protect the health of men and women employed in industry. The corresponding Home Office regulations of the British Government include numerous injurious occupations such as bichromate works, brass mixing and casting, chemical works, earthenware and china manufacture, enameling of

ment in the health of our workingmen, which is as much a State duty as the protection of women and children in industrial pursuits.

It is no doubt a difficult task to establish positively and clearly the direct causes of ill-health in industry, and of premature invalidity or incapacity to work, but the evidence is entirely sufficient to warrant the conclusion that to a large extent the health of our wage-earners is undermined by working conditions which are subject to a material improvement. We know, as a matter of fact, that the most important causes of invalidity, or incapacity to work, or in other words, of physical impairment, are tuberculosis of the lungs, and the large group of respiratory diseases which, among others, shorten the lives of potters, glassworkers, stonecutters, etc. We know that next to these a most important factor is muscular rheumatism, followed by diseases of the heart and the circulatory system. We know that in many industrial processes eye-strain is a serious factor, impairing not only the visual function but causing nervous, digestive and other serious bodily disturbances as the result of occupational activities. Many employments are also the direct cause of digestive disturbances, chiefly, of course, where metallic poisons in the form of dust, fumes, vapors, etc., are inhaled into the system or introduced into it otherwise by personal uncleanness or indifference, but all such afflictions are the direct consequence of industrial activity, which can be safeguarded against only by stringent rules and the intelligent co-operation of workman and master in the use of all reasonable safety precautions.

The ultimate social and economic value of deliberate and rational measures for the prevention of industrial diseases and the resulting impairment in industrial efficiency and wage-earning capacity, would be enormous. Briefly, by way of illustration, the difference in the mortality rate of workmen employed under comparatively healthful conditions and of men exposed to unhealthful conditions, are sufficient to account for not less than one-third of the average adult death rate at the present time. For illustration, at ages 25-34 the death rate of farmers and agricultural laborers, according to English statistics (for there are no corresponding data for the United States) is 3.96 per 1,000, for printers the corresponding rate is 6.46, and for cotton workers it is 5.48; at ages 55-64 the death rate for farmers and agricultural laborers is 20.25, for

ough knowledge of the actual conditions under which industry is carried on, while every protective measure must be framed to enlist the hearty co-operation of employees to make the same thoroughly effective. To be productive of the best results all factory legislation which has for its object the conservation of health and life in industry must be based upon sound medical considerations to bring the particular provisions of the law into harmony with the most advanced and thoroughly qualified medical judgment of the day. Other governments throughout the world have utilized expert medical opinion in matters of this kind, and it is of the utmost importance that all future labor legislation bearing upon questions of health and life in this country should also be based upon thoroughly qualified medical opinion.

Medicine as a healing art is no longer the sole function of the medical profession, but the vast domain of preventive medicine offers immense opportunities for useful and remunerative work to medical men of ability who may specialize in this field of useful research and beneficent employment. In this direction there lies the most promising future for the medical specialist trained in the science and art of industrial hygiene. Whatever contributes to the raising of the physical well-being of the race is not only a humane duty but the most practical aid toward the ideal of attaining the highest degree of individual and social efficiency on the part of the millions of toiling men and women who make up the best and the most that constitutes the mass of mankind.

COMMISSIONER PORTER — This very earnest and impressive paper by Mr. Hoffman may well serve to stimulate our interest in this important subject, and cause us to give it that consideration which matters of importance demand. The discussion on this paper will be started by Dr. Charles C. Duryee, of Schenectady.

DR. CHARLES C. DURYEE — I have been intensely interested in this paper. I wish it might be that a copy of it might be in the hands of every employer and every man who earns his bread by the sweat of his brow. It is a subject which has been brought to the attention of many health officers in the last few years. It happens that in the city from which I come, that some attention has been paid to these very things. They have not been forced by law, or by the health officer, but they have been the contributions of the managers of those works, which are located there. The General Electric Company which employs 16,000 or 17,000 men — think of massing such a number of men in one plant — has done everything and is now doing it, so that an American workman may have fair, hygienic conditions under which to labor. They have started with dust machines, and if you go to the works of the General Electric Company, you will see the best application of the

There have been sections of law to cover dust-creating machinery, and the Department of Labor requires the removal of dust by exhausting fans.

In Massachusetts there are fifteen inspectors. The work is complex, and those inspectors have taken up conditions in the factories and published reports. In the June Bulletin of the State Department of Labor is a report of a special investigation as to the calico print industry of this State, the method and process from the time the muslin goes into the mill until it comes out print goods. And besides, the State Labor Department has been securing for the past two years physical records of children in factories. In Great Britain there is a medical inspector. In Belgium they have a chief medical inspector, with a number of inspectors and a laboratory. In France they have none, but they have health officers. In Germany they have health officers. In Holland, the same.

But we have different conditions here. We cannot go into these places and overhaul things as we might wish. How many of these conditions in factories classified as "deaths from tuberculosis" are not properly traceable to the factory, but to the home and housing conditions of the employees. Those things must be taken into consideration. Do not place all the blame on the factory owner. I believe in Dr. Hoffman's work, but New York State is doing something; New York State is the first State in this country to do it, and I think the work can compare favorably with the work done in other countries. New York State is not having a band to attract attention, nor is it making any grand-stand play, but it is going ahead, doing steady work. But of course this takes time. The Bulletin of the Department of Labor is published quarterly. We have no authorities here in this country, but that is because no one has been taught. But eventually we will arrive at morbidity statistics. We do not want mortality statistics, but morbidity statistics. If the industry is the cause of disease, then it is easy to get at the disease. Let us have preventive medicine, and that can only come through proper statistics.

It has been my plea for two or three years to teach industrial hygiene, and have medical officers teach it, and try to get the best results from it.

COMMISSIONER PORTER — In conclusion, my friends, it seems to me that enthusiasm in a good cause is a good thing and I trust it may never grow less: but we must have statistics to show the results of prevailing conditions. You can take insanity, pauperism, crime, and avoidable and unavoidable accidents; and when you come to the final summing up, you can charge it to the medical profession; and not one of us can stand before the bar and plead "Not guilty"; and yet that indictment is subject to a reasonable argument before the verdict is given.

It is well that Mr. Hoffman presents an earnest paper on this subject, where sanitation is so particularly needed, and where good work would undoubtedly be done. Something which most of us have already considered, and which the departments of the State, represented here to-day, have already taken up; and yet it remains true that these other matters can be charged against us as this subject which Mr. Hoffman has brought out. It is well it was brought out at this Conference, and it arouses us to work, and it revives the belief that not only the reform Mr. Hoffman demands at our hand shall become practical, but other matters which seem Utopian to-day will be the practice to-morrow.

Gentlemen, I think we have had a very auspicious opening to our Ninth Annual Conference. This evening, we will have the president of Rochester University with us, and Dr. Sedgwick, our good friend from Massachusetts, who will have an important and interesting address, and I hope you will all be here at 8 o'clock sharp this evening.

We will now adjourn until 8 o'clock this evening.

work, and cannot go to Rochester at that time. With best wishes for the success of the meeting, I am, very sincerely yours, Charles E. Hughes."

We have with us, however, those who can speak with authority on the subjects they have chosen, and the first speaker of the evening is the gentleman holding the position of Health Commissioner of the State of New York, and it is with great pleasure that I introduce to you Dr. Eugene H. Porter, who will speak on the subject of "Public Health Problems."

wise and noble measures for the uplift of the fallen, the care of the deficient, the cure and prevention of moral evils? Is it giving the life of its citizens new meaning, capacity, interest and inspiration? That city alone, said the Bishop, is really great, which greatly serves human life. Mark the definition of the Bishop and note how closely it approaches to the modern conception of sanitary duty. Sanitation is humanitarianism. The motto on the flag is "The welfare of our fellow men." That is about all there is of sanitation, but the proper interpretation of the motto may require some hard thinking.

Sanitary science of to-day is the inevitable result of a most remarkable evolution. As it has developed and its principles have become firmly established it has been more and more clearly perceived that its art and philosophy extended beyond the individual, beyond groups or classes, over all artificial limitations and included in its wide domain all that made for the betterment of humanity. It is concerned with the moral and ethical as well as the material, for the highest and most significant expression of sanitation points directly to the highest plane of living.

The old days and old conceptions of disease and health are passing away. The beliefs, selfish and ignorant, that human beings could be crowded into humble houses destitute of light and air, reeking with filth and swarming with vermin, to die like vermin; that men and women must work more hours each than flesh and blood could bear; that children should be dwarfed and maimed by cruel labor; that the distressed and destitute must protect themselves against not only want but against the fatal diseases caused by man's ignorance, greed and inhumanity; these beliefs are passing away. The old way has cost more lives than all the wars since Alexander, and more gold than has ever been mined. Slowly the lesson has been heeded. We have been led to more general concepts and away from the limitations of earlier prejudices and antagonisms.

In new situations vigor and enthusiasm construct a higher ethics, the practice of which elevates the plane of living. Now this drift of scientific, and to a very appreciable degree, also popular opinion, can mean but one thing. It means that sanitary science has in its process of development become a practical

It is rather in that clear and illuminating conception of great duties and great opportunities that showing through the shell of routine shines with full radiance on the intricacies of diverse relationships. It is this side of public health administration — that leading from the material to the ethical — from bigness to greatness that I desire to call your attention.

INDUSTRIAL HEALTH

And first I will quote from an able article by my friend Mr. Edwin Björkman in *World's Work* on "What Industrial Civilization May Do to Men."

"Of the fearful conditions under which most of the work is done; of the deafening noise and parching heat in the steel mills; of the stifling steam and scorching doors in the laundry; of the undulating dust that breeds throat and lung troubles in stogie sweat shops and steel mills alike; of the neck-breaking application demanded from the man who tells the exact moment for pouring the metal by the color of the flames above the converter; of the soul slaying routine that requires a girl in the toll-works to repeat the same set of movements 16,000 times in ten hours, I cannot speak in detail here. The worker grows gray at thirty-five and the girl worker never lasts more than six years." During the year ending June 30, 1907, industrial accidents led to the killing of 526 men. Every four hours a man is so seriously injured as to require prolonged hospital treatment; once in twenty-four hours a man is maimed for life; once in twenty-four hours a man is hopelessly disabled and once in every sixteen hours a man is killed. The places where most of these workers, 80,000 in number, live are filthy and indecent beyond belief. It is estimated that the loss of this wanton waste of life is not less than \$5,250,000. To correct these monstrous industrial evils, to abolish these crimes against humanity, the first great power invoked by the writer is the present sincere and efficient health officer of Pittsburgh. That is to say sanitation — the application of the modern practical methods of sanitary science. The second helpful agency appealed to is the united effort of a group of strong, intelligent, public-spirited men educated in sanitary affairs and working *with* the constituted authorities. In time this effective combination of

Taking these figures as a basis as to eye defects, enlarged tonsils, bad ears and decayed teeth, then the army of children needing attention throughout the United States would be seven out of every ten, or over 14,000,000. Whether these overstate or understate the truth the health and school authorities of the country should find out. The only *new thing* about the physical defects of school children is not their existence but our awakening to their existence, their prevalence, their seriousness if neglected and their cost to individual children, to school progress, to industry and to social welfare.

The best index to community health is the physical welfare of school children. The only index to community conditions prejudicial to health that will make known the child who needs attention is the record of physical examination. The child then as well as the steel worker or the girl drudge has health right. And so the truest index to economic status and standards of living is health environment. The best criterion of opportunity for industrial and political efficiency is the conditions affecting health.

Alcohol and Health

We have noted the definite relationship between sanitation, industrial workers and school children. Let us see what it has to do with another great and perplexing problem. In presenting to you the conclusions I am about to offer I claim absolutely no originality. I have knowledge of their weight and authority and I believe them to be true. I may add that I have given to the matter considerable study with a resultant increase of my conception of its importance.

Alcohol is a definite chemical substance which has certain well defined effects upon man's physical and mental faculties. What are these effects? For twenty years a number of the leading physiologists and psychologists have been working to accumulate accurate knowledge concerning alcohol by direct experimental study. I will try to give briefly the results of these investigations using largely conclusions as given by Professor Rosanoff of Clark University. What is the authority of the evidence? Exactly the same as that of the evidence of investigations in physics or chemistry. It is the authority of the experimental method of modern

effect of alcohol is cumulative and increases rapidly as time goes on. The notion that alcohol stimulates a person to his mental work is not warranted by facts.

6. *Alcohol and Free Association of Ideas*

Free associations of ideas are affected by moderate daily drinking even more than the simpler habitual associations. The effects of alcohol on free association of ideas is cumulative.

7. *Alcohol and Memory*

Ordinary memorizing is greatly retarded under the influence of moderate daily drinking. This conclusion has been doubly corroborated.

8. *Alcohol and Disease*

Fatty degeneration of the heart, calcification of blood vessels, various forms of fatal liver and kidney diseases, numerous and important nervous diseases, susceptibility to acute infections, decreased resistance to pneumonia and other diseases, and a positive and pronounced ally of tuberculosis.

Investigation further shows that alcohol is responsible for one-fourth of the inmates of our insane asylums, for two-fifths of all abandoned or neglected children, for the presence of half our convicts in our prisons, and of at least an equal number in our workhouses and jails. One-third of all the recognized pauperism and poverty in civilized nations results from bodily and mental inefficiency due to indulgence in alcoholics.

We are not here to advocate a crusade against alcoholic beverages — we are not here as prohibitionists. We are here as sanitarians to carefully consider facts presented.

It would seem that the use of alcohol produces inefficiency of brain and muscle; breeds insanity and causes poverty and pauperism. These further translated mean immorality, filth, disease and death. In this social, economic and political problem the threads of our science are heavily interwoven. It is for us as sanitarians to recognize the duties and responsibilities of further service to our fellow men.

by the bacteriologists to see if they can discover any germ which may originate the tumor; and finally by animal experimentation to study the life history of such tumors from start to finish. We have not yet found the cause of cancer nor the cure but I know we will.

Opposed to this record what have the foes of research done — the antivivisectionists, as they term themselves, and as they are termed by the silly and sensational newspapers that support them. As Dr. Keene says, they have done nothing but stand in the way of progress. Not a single human life has been saved by their efforts; not a single household made happy; not a single disease has had its ravages abated or abolished.

These four problems so briefly and imperfectly presented may serve to show the diversity and complexity of the questions confronting the sanitarian.

Common Sense in Sanitation

While it is most desirable to have a broad outlook, to survey with a comprehensive glance, if possible, the entire field, it is perhaps of still greater importance to determine wisely exactly what part of the field to occupy.

At present we have so much money and so much energy. Let us use this money and this energy in that part of the field where we feel certain we may produce definite and lasting results. For example, we know how the contagion of certain diseases is spread and we know how to prevent it. Let us take the things we know positively and definitely about, and do what we know will save many lives. We have many associations and charitably-minded and well-meaning people that are stirring up sentiment and increasing the amount of energy and money that can be devoted to public health. It is time that the sanitarians of this country saw to it that that energy and money is wisely used. It is essential that our resources should be devoted to the basic and vital things and not squandered on things which are only theoretical and possible and of minor importance. Sanitary reform is not a matter which can be safely left with medical men as such simply, unless they are trained sanitarians, and it certainly cannot be left to those who are entirely laymen as far as sanitary science goes. Let

THE PEOPLE'S INTEREST IN PUBLIC HEALTH

BY RUSH RHEES, LL.D.

President University of Rochester

It is a matter of great interest that in one of the greatest schools of the country they have established a chair of "preventive medicine." If this makes us think we have been going to school in China, where we understand the custom or habit is to pay a physician, and give him a good salary for keeping you well, and then dock his salary for every day the patient is sick, still it may be that in the passage of years, we will find ourselves more indebted to that particular Oriental people than we think it is possible to do at this time.

You stand as living evidence of the fact that the community recognizes its right to health. The normal condition is health, and where disease is prevalent, there is some ill that should be ascertained and banished. And before proceeding to the reasons why the public is interested in the work which you represent, I desire to give myself the satisfaction in expressing the interest which the public is having in the work being done by the health officers of the State.

I had only yesterday a letter from one of the most eminent statisticians, speaking very warmly of our own State Department of Health. Is it not that the improvement in the last seven or eight years in that department in the gathering and publishing of statistics is something enormous; and these records are now such that the citizens of the State may be reasonably very proud of them.

Standing here as a citizen of Rochester, in a sense having a right to be one of your hosts, as you come to this gathering, I desire to add a word of appreciation for the health bureau of the city of Rochester.

We have a health administration that we believe adds very largely to the value of our city as a place to live in, and to the advantage of our city as a place to work in; and everything done by that bureau for the protection of the people and the prevention of disease and securing to the people the innate right to

The second reason is because, when we learn of unfavorable conditions for life and work, we are solicitous for the improvement of those conditions, and to you we look, because through all the years which have gone you have been our leaders in securing improved health conditions.

I need only mention for the benefit of the citizens here with you, I need only mention four or five of the directions in which these efforts for the improvement of our conditions have been undertaken and fostered by your people. For instance, the improvement of the water supply. The change from the time when in a town like Rochester every man drank water from his own well, or his neighbor's well, until we get to-day water brought here to us, and surrounded with the utmost care in seeing that it is wholesome. That one thing, that is simply an immeasurable advantage. You have given us the luxury of one of the most permanent, fundamental needs of human life. You have given us the advantage of the advertising sort which comes from the fact that a city here or there has a water supply that is wholesome, and adequately protected.

By the same argument we may turn to sewage, but I would not speak on that as you have a master to speak on that subject to you later in the evening.

There is the possibility of very serious danger to the community in this matter; and in the economic distribution and disposal of this waste the opportunity for conserving the financial interests of the community is very considerable. The public is interested in the work which you represent because such things as these are your solicitude and your care. But, more particularly, we look to you for the care and control of infectious disease. Of old, men were disturbed when a pest of smallpox appeared in the midst of a community, and it swept a community as if a scythe of death had swept over it. We have since learned of other pests, foes stealing about ready to attack the people. You have made us to understand that typhoid fever is not a mysterious visitation of Providence, but a negligence or carelessness of the fundamental rules of health. And by controlling the sources of disease you are making our lives more tolerable, more interesting and more full of power and satisfaction.

this state of the matter: all these efforts for securing conditions favorable to good health mean "Further inroads upon private liberty." There is always someone who rises and raises a cry of "personal liberty," and states that this interferes with his private affairs. If the health officers of any town undertake to secure proper and wholesome conditions of living, whether of food supply or what-not, there is always raised from some quarter the great cry of "liberty" and "infraction of the liberty of the citizen." That is a mighty word, and it makes a strong appeal to some. There are some whose homes have not been visited by such plagues as occur in others, and they say, "Why should any law come in and tell me to clean my factory, or my barn, or to tear down a tenement?" If we like to live in a community, and the phenomenon is that we prefer community life to perfect freedom, it is impossible to live in a community without the surrender of some of this freedom; and the question presented in community life is this: to what extent is the perfect liberty of individual action to be curtailed in order that the perfect freedom of the community life may be obtained?"

The community lays its hand on the individual of the community at any point, and at any time, and it says: You must not or you must do this or that. His liberty to that extent is gone.

When they come with a demand that certain private interests should be surrendered to the public good, only so can we get it where many multitudes of people gather because they find greater satisfaction in the life developed in great cities, than in isolation.

There is one other reason — two other reasons — which I will very briefly give to you for the interest of the public in the work which you represent.

The first is the interest of public economy. Two aspects of economy I would call to your attention. The first is that which comes from the prevention of crime, for it is clear to us that the prevalence of disease, and the development of ill-fed, ill-nourished (in any direction) life has a tendency to increase in insanity and crime. It is overwhelmingly established that the connection is not only intimate but causal. That being true, let us consider what we are paying for prisons, hospitals, asylums and the care

dition which indicates to us the supreme confidence the public has in the work which you gentlemen have undertaken and are guiding.

My last word is that the interest in common philanthropy dictates to us profound regard for the things in which you are guiding. If we believe a man is born for living and not for death, for health and not for sickness, and that it is the right of every human being to have an opportunity to grow and fulfill its purpose of existence, all those reasons which appeal in other fields cry out to us to lend a hand to those efforts which shall not cure disease after it is contracted, but prevent the contraction of disease, and thus make the community wholesome and strong because free from evil estate.

In England, for example, which was the first country to squarely face and master the problem of the sewage pollution of streams, many years were occupied in investigation and experiment before decisive steps were taken. Massachusetts, profiting by the experience of England attacked this problem about 1880, and met it squarely and vigorously in 1886. Following the example of Massachusetts, the State of Ohio has more recently dealt boldly with the same difficulties; and now the question comes squarely before the great State of New York whether it shall or shall not have the courage to stop the sewage pollution of its streams.

As an aid to the solution of the problem the experiences of Massachusetts may be instructive. In Massachusetts the foundations for the present excellent practice were laid and definite progress was begun by the enactment of Chapter 274 of the Acts of 1886. Under this statute the State Board of Health was given "the general oversight and care of all inland waters" and instructed (among other things) to "recommend measures for prevention of the pollution of such waters" in order "to protect and develop the rights and property of the commonwealth therein and to protect the public health * * *".

"It shall from time to time consult with and advise the authorities of cities and towns, or with corporations, firms or individuals either already having or intending to introduce systems of water supply or sewerage, as to the most appropriate source of supply, the best practicable method of assuring the purity thereof or of disposing of their sewage, having regard to the present and prospective needs and interests of other cities, towns, corporations, firms or individuals which may be affected thereby. It shall also from time to time consult with and advise persons or corporations engaged or intending to engage in any manufacturing or other business, drainage or refuse from which may tend to cause the pollution of any inland water, as to the best practicable method of preventing such pollution by the interception, disposal or purification of such drainage or refuse: *provided*, that no person shall be compelled to bear the expense of such consultation or advice, or of experiments made for the purposes of this act. All such authorities, corporations, firms and individuals are hereby required to give notice to said board of their intentions in the premises, and to submit for its advice outlines of their proposed plans or schemes in relation to water supply and disposal of drainage or refuse. Said board shall bring to the notice of the attorney-general all instances which may come to its knowledge of omission to comply with existing laws respecting

having charge of the sewers in cities and towns shall have authority to make such regulations regarding the use of the sewers as are necessary to prevent the entrance or discharge therein of any substance which may tend to interfere with the flow of sewage or the proper operation of the sewerage system or disposal works.

§ 3. The state board of health, if convinced, upon examination, that a filter bed or other works for the treatment or purification of sewage causes the pollution of a stream, pond or other water, or is likely to become a source of nuisance or create objectionable results in its neighborhood by reason of defective construction, inadequate capacity or negligence or inefficiency in maintenance or operation or from other cause, may issue notice in writing to the city, town or person owning or operating such works requiring such enlargement or improvement in the works or change in the method of operation thereof as may be necessary for the proper maintenance and operation of the works and the efficient purification and disposal of the sewage. In case the state board of health is satisfied after investigation that the unsatisfactory operation of a sewage disposal system is due wholly or partly to the discharge into the system of manufacturing waste or other substance of such character as to interfere with the efficient operation of said works, said board may if necessary prohibit the entrance of such waste or other material or may regulate the entrance thereof into the system, or may require the treatment of such waste or other material in such manner as may be necessary to prevent its interference with the operation of the works.

§ 4. The supreme judicial court, or the superior court, shall have jurisdiction in equity to enforce the provisions of this act upon petition of the state board of health or of any party interested.

§ 5. This act shall take effect upon its passage.

Approved May 21, 1909.

[CHAP. 290, ACTS OF 1909]

AN ACT to authorize the town of Mansfield to construct and maintain a system of sewerage and sewage disposal.

Be it enacted, etc., as follows:

Section 1. The town of Mansfield is hereby authorized to lay out, construct, maintain and operate a system or systems of main drains and common sewers for a part or the whole of its territory, with such connections and other works as may be required for a system of sewage disposal; and, for the purpose of providing better surface or other drainage, guarding against pollution of waters, and otherwise protecting the public health, may lay, make and maintain such main drains as it deems best. For the purposes aforesaid the town

suspected in waters that look innocent and even sparkling. Little streams of sewage may thus meet and mingle with pure waters, losing themselves completely in the limpid stream, yet loading it with filth and foulness, and charging it with germs of death.

We hear much nowadays of pure food supplies, pure water supplies and pure air supplies; but the removal of the wastes and refuse from our cities, towns, villages, and farmhouses is no less important. For it is with the social organism,—the municipality, the village, the family,—very much as it is with the human organism: to retain putrefying wastes within its borders is an evil similar to that which arises in the human body from undue retention of urine or bowel contents. Poisoning ensues in the one case almost as certainly as in the other.

But again comes the question, what shall we do with the wastes of our cities? Shall we simply throw them, as our ancestors did, in the sixteenth and seventeenth centuries, out of the windows, out of the doors, and out of the houses, into the public streets, filling these with rubbish and wastes, and making it risky for passersby lest slops shall fall upon them from chamber windows? We have certainly got further than this. We remove our wastes from human habitations, employing some form of sewage disposal, refuse disposal and garbage disposal. We get rid somehow of ashes, paper, garbage and sewage. And for the sewage, often the most abundant and always the most dangerous portion of the wastes of habitations, we provide either cesspits, cesspools or sewers. When a small community introduces sewers, it most often turns to the nearest stream as its natural means of sewage disposal, for is not the stream already dirty, carrying, especially in the spring time, mud or rubbish of various sorts, and not infrequently dead cats or dogs? Is not the stream the natural and logical place for disposing of sewage, which after all is only a particularly dangerous form of dirty water? So, at any rate, communities are apt to reason; and as long as the nature of dirt was not understood, and until we had learned that dirt, disease and danger all belong in the same category, there was every excuse for this sort of sewage disposal.

But we have learned our lesson. In the hard school of experience we have learned that hundreds of epidemics of typhoid

active measures are under way for the introduction of an improved water supply into this fever stricken community.

The change in public opinion of late years under the constant sanitary education of the people is not only extraordinary but encouraging, and the time is at hand — if it has not already arrived — when the stain of sewage now almost everywhere borne by our lakes and rivers, must be forever erased. And for this erasure we must look first to the people — and especially to the leaders and representatives of the people, our lawmakers — and next to their official agents, chief among whom are our State Departments of Health. These latter, in turn, armed with the authority of the law and equipped with the appliances of modern science deserve and require the patriotic support of the people.

The recent protest of a distinguished citizen of the State of New York against the conversion of the Hudson river into a sewer is well worth remembering in this connection. The writer, Mr. John Bigelow, through the shades of Hudson and Fulton, cries out — “The river you are making such an ado about discovering and navigating is not the river either of us ever saw. The river we know and which bears one of our names consisted of as pure and delicious water as ever descended from heaven. You have permitted it to be converted into a great sewer into which all the cesspools, barnyards, kitchens, mills and factories between New York and Troy discharge all their polluting exuviae and rubbish, instead of sending them back upon the lands whence they came and which they should enrich. In doing this you have deprived all the river counties of one of their most valuable crops. That river in our time used to swarm with shad, herring, sturgeon, striped bass, bullheads, sunfish and pan fish of many other varieties. These fish used in our times and for many years after to furnish at least one-third of the nourishment of all the inhabitants for ten miles back on both sides of the river from New York to Albany. * * * If you wish to honor us for what we have done, to render this magnificent waterway useful, restore it to the condition in which we left it, and when it was ready to appease the hunger and thirst of millions of people.”

is enormous, though it is not possible to determine it with absolute accuracy. The standard source of information is the special report of the Census Bureau on "Wealth, Debt and Taxation." The well-known statistical expert, Professor Willcox of Cornell University, has supplied me with information prepared by himself after conference and correspondence with the compiler of the census volume referred to. Here is an itemized summary of the expenditure for 1902:

Expenditures in 1902 for:	New York State	United States
Health conservation.....	\$1,534,633 00	\$9,460,520 00
Sewers, drainage and other sanitation.	6,911,047 00	26,417,947 00
Care of insane.....	4,913,615 00	23,021,207 00
Hospital subsidies from pub- lic funds	712,129 00	2,276,336 00
Operating expenses of water- works (estimated).	4,400,000 00	21,400,000 00
	<hr/> \$18,471,424 00 <hr/>	<hr/> \$82,576,010 00 <hr/>

In this estimate no mention is made of the cost of charities other than hospitals, or parks and playgrounds, and of many other forms of outlay having a recognized relation to public health.

But the items included amount to nearly eighteen and a half million dollars for New York State and more than eighty-two and a half millions for the United States. The significance of these figures of New York State may perhaps be better judged when we notice that the amount of the taxpayers' money thus expended amounts to more than 45 per cent. of the total cost of public education in this State, more than double the cost of all our courts of law and law officers, double the cost of all the fire departments of the State and more than treble the cost of all our street lighting. Furthermore, there is no branch of public expenditure in which the outlay is increasing so rapidly as in this. It is not unlikely that if similar figures for the year 1909 were available, it would appear that New York State is now spending annually \$30,000,000

of New York, at its annual meeting. The import of this resolution was that it was the opinion of the society that only those physicians should be appointed as health officers who could show evidence of special training in public health work, and the inference of the resolution was plainly a request to the Commissioner that his future appointments should be made on this basis. Unfortunately, as the Commissioner pointed out there was then no institution in this State (nor in any other State for that matter) offering courses giving special training for public health work.

It is impossible for the medical schools to provide the necessary training. The medical curriculum is already overcrowded, and the subjects which form the backbone of a course of training for sanitarians, namely, vital statistics, chemistry and biology, and sanitary engineering, are themselves sufficient to fill up a professional curriculum. As Professor Sedgwick has well said:

“It is to-day absurd for the average well-trained medical student to think of becoming an expert in such branches of hygiene as water-supply, sewerage, garbage collection and disposal, gas and other forms of light supply, ice supply, milk supply, the abatement of nuisances, etc. These belong rather to the sanitary engineer, sanitary chemist, and sanitary biologist; to sanitation rather than hygiene.”

What we need is trained sanitarians supported by an awakened and intelligent public opinion. A new profession is rising in this country, and the public interest demands its speedy development. I allude to the profession of the public health officer, a profession already recognized in England by a special diploma. The health officer should wherever practicable devote himself wholly to the duties of his office and be absolutely prohibited from practising medicine. In this respect he should be like the lawyer, who on election as judge ceases to practise law. As Professor Fisher has well said, “No court, police or fire department or any agency of government can be more important to the people than this under the complex condition incident to the rapid growth of both rural and urban populations,” yet I recognize that such officials will not be appointed, or if appointed, adequately supported until public opinion is educated in matters of hygiene and sanitary science.

a due proportion of students. The attendance in our best medical schools, in most of the medical schools in the country indeed, has considerably fallen off, and I believe that we shall see a change even in the function of the physician. In the field of personal hygiene he will be called on to prevent disease and not merely to cure it. A similar change has already taken place in the profession of law. A generation ago lawyers collected damages for us after we got in trouble. To-day the chief business of lawyers is to guide men in the conduct of their affairs so that they shall escape trouble. A generation ago the practice of lawyers was consequently in the courts. To-day the best lawyers all do their work in their offices. And in medicine as in law, the magic word is coming to be prevention and it is because the sanitarian prevents suffering from disease not only to scattered individuals, but to whole communities, that his calling is in harmony with the best professional spirit of the time and challenges the interest and enthusiasm, and the mind and heart of the rising generation.

The State Commissioner of Health, Dr. Porter, caused last winter to be introduced in the Legislature a bill providing for the establishment at Cornell University of a State School or College of Sanitary Science which would rank with the College of Veterinary Medicine and the College of Agriculture which the State has already established there. A large number of the subjects prescribed in the curriculum of such a school of Sanitary Science are already taught in the different departments and colleges of Cornell University. The number of new subjects to be introduced would not be large. Consequently, the cost of maintaining the school would be small. Furthermore, it happened that though Cornell University is in general crowded, the Medical Department, owing to the recent requirement of a college degree for admission, has room to spare in its building. I believe that in the interest of the public health the people of New York State should support the Commissioner in getting the bill enacted into law this year. I know no other way in which by so small an expenditure of money so much might be accomplished for the health of the State of New York. If the Commissioner secures the establishment of his School of Sanitary Science, I pledge him the cordial co-operation of Cornell University in making its work

REPORT OF THE PUBLIC HEALTH EDUCATION COMMITTEE OF THE AMERICAN MEDICAL ASSOCIATION

BY ROSALIE S. MORTON, M.D., *Chairman*

I have been asked to come before you to present the Report of the Public Health Education Committee of the American Medical Association. I am sorry to say that the acoustics in this hall are not very good, and I am going to ask those sitting under the sides of the gallery, if they will not come to the side seats nearer to the front, as I know from my experience, seated there yesterday, that very little can be heard.

The resolution creating this committee was passed unanimously by the House of Delegates of the American Medical Association at its last meeting in Atlantic City, June, 1909.

A meeting of the women physicians of the American Medical Association was called in New York City, July 20th. Women from all over the United States were present and formulated plans for work in women's clubs, young women's christian associations, mothers' and teachers' associations, social settlement clubs, etc., and work is now going forward in Arizona, Connecticut, Georgia, Indiana, Massachusetts, Michigan, Minnesota, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Washington, Wyoming, Hawaii, and the District of Columbia.

The plan of work is to affiliate through the committee the large amount of public health education now being done individually and by scattered groups of women, to concentrate this work under the American Medical Association, giving unity of purpose and co-operation of effort to all work along these lines for the public good.

This work is directed by a central committee composed of women physicians from different sections of the United States, one from each of the following: Colorado, Texas, California, Illinois, Kentucky, Massachusetts. The secretary, treasurer, and chairman are from New York City. The honorary chairman is Dr. Sarah R. Adamson Dolley, of Rochester, N. Y., the second

The value of vaccination and serum-therapy.

The need of medical inspection in the public schools.

The advisability of a National Board of Health.

How to instruct children concerning the origin of life. (This to be presented before teachers and mothers.)

The care of the health during the menstrual period.

The responsibility of girlhood to motherhood.

Pregnancy and the Menopause.

The value of the early diagnosis of cancer in women.

The value of animal experimentation in surgery, in nutrition, in diabetes, in nervous diseases, in tuberculosis, and in infectious diseases.

The responsibility of boyhood to fatherhood.

The prevalence and prevention of venereal diseases.

Social hygiene. How parents may protect their sons and daughters from immorality.

Women physicians, as members of women's clubs, etc., come in contact with a vast number of women, and we have learned that what Dr. George W. Wagoner, of Johnstown, Pa., said lately in his presidential address to the Medical Society of the State of Pennsylvania, is true; namely, "Doctors are losing the confidence of and receiving criticism from the laity." This is largely due to the fact that throughout the country the public is being exploited by pseudo-scientists who affirm that we, the so-called "drug-doctors," are commercially interested in keeping the people ill, while they are working to prevent disease.

The laity is much interested in public health education, the psychological moment has come, and it would be a serious reflection upon our profession if we did not now combine with the health officers to educate the public to a thorough appreciation of the position of the doctor as the protector of the health of the community, and thereby emphasize the fact that this desire to educate the public for the prevention of disease is general among physicians. I come before you as chairman of this committee to ask your hearty co-operation as individuals, and as members of the New York State Department of Health, in this work of service to our country, for you know so well how to develop every sanitary measure and you so successfully protect the health of

Association Committee on Legislation; Dr. Frederick P. Henry, President of the Philadelphia County Medical Society; Dr. Milton J. Rosenau, formerly of the Public Health Service of the United States, now Professor of Harvard, and Surgeon-General Walter Wyman, of the United States Public Health and Marine Hospital Service.

Dr. M. May Allen of this city is New York State secretary of our committee, and we hope through your co-operation with her and with the various county chairmen, to make New York the leading State in this national movement for lessening human suffering and saving human life.

CHAIRMAN SEYMOUR—I am sure you have all been very much interested in hearing Dr. Morton tell of the work of this committee; and I think I can say for all that she will have the hearty and cordial co-operation of the health officers of the State, and the State Department of Health in every way that we can do so.

The Commissioner desires me to make an announcement that there will be a smoker to-night at the Powers House, and we will there get an opportunity to meet several gentlemen who are on the program for to-morrow.

Surgeon-General Wyman and Dr. Wilbur, from Washington, are in the audience now, and I wish they would come to the platform, as I wish to have their moral support if I can get it, in conducting this meeting.

You will notice by the program that following our usual custom, we inflict one paper on legal topics upon the delegates. I know this is not a particularly interesting subject, but some of the men feel we must have something of the kind, and it is my misfortune to have to present this to you.

“The out-put of legislation has of late years been incomparably greater than in any previous age.”

So during this period it is not surprising that we should have many new laws affecting public health, though the ground is certainly not properly covered even yet.

The Public Health Laws of a country, State or community are of the utmost importance to every inhabitant. Nor does the interest cease there, for so bound up are we in our relations to our fellow men that the health laws, regulations and ordinances of other countries, cities and communities and the manner of their enforcement become almost as important to us. In the enforcement of such laws we are brought face to face with the fact that in these days of tremendous activity and commerce, of rapid immigration and of easy intercourse between the countries of the world, when many of our uneasy millions of people are constantly passing from one place and from one country to another, the opportunities for the spread of epidemics of contagious diseases are continual and are constantly on the increase.

The attention paid to the subject of public health in recent years, the quickening of the public conscience regarding improvements in our manner of living, the value and necessity of sanitary reforms along many lines and the fact that the intelligent public must be protected from the ignorant and careless, would indicate that our improved system of safeguarding the public health was a thing of recent growth. But while it is true that we have made tremendous advances in the last twenty-five years in our scientific knowledge of the causes of disease and also in sanitary science generally, the fact remains, and the student of history knows, that some of the ancient nations understood in many respects the value of sanitary methods of living and that they paid intelligent attention to the subject.

In early history we find a code of sanitary regulations given for the children of Israel through Moses which could still be applied with good results at certain localities in any of our States. Indeed, the commands laid down in Leviticus and Deuteronomy to the children of Israel for the preservation of their health and safety could still be read with advantage by many of the civilized and educated inhabitants of the globe in the twentieth century.

tion, typhoid and other preventable diseases to exact such an enormous toll of loss and suffering from our fellow men.

The welfare of State and citizen alike demands that the law-making bodies should recognize the necessity of protection against the ignorant and vicious to the end that their lives and habits should be regulated in such a manner that they should not be a danger to others.

THE RIGHT TO ENACT HEALTH LAWS

If you grant that the welfare of the State is served by its protecting its citizens, then it needs no argument to demonstrate the right of the State to enact such laws as are necessary to accomplish this purpose even though the effect of these laws is to interfere with individual freedom and the use of private property. Our courts have almost universally recognized this right and when called upon, as they often have been, to uphold laws designed to protect public health where liberty of action of the individual has been restricted, they have shown their wisdom and have established the health official in a firm position. The principles upon which these rights are established rest upon the broad foundation that everyone owes a duty to his neighbors to do nothing to imperil their lives or health. The interest of no one can be higher than his neighbors', and he may be restrained from injuring the community, although he may live and die as he pleases, provided he does not endanger the life or well-being of others. It would seem, therefore, that it was one of the most important functions of government to provide for the welfare of the people by uniform laws designed to promote public health. Indeed, society could hardly exist without such laws and every instinct of self-preservation justifies their adoption.

Despite the general indifference to the subject, statesmen long ago appreciated the importance of legislation to preserve public health and raised their voices in its behalf.

Lord Derby realized, however, the ineffectiveness of health legislation without an intelligent public opinion behind it, when he declared long ago that "no sanitary improvement worth the name will be effective, whatever acts you pass or whatever powers

of diseases and the work of bacteriology have wrought a great change in the care of cases and their relation to the general public.

Modern mechanical and electrical inventions have wrought a necessity for regulations as to their use. The vast immigration of citizens from one country to another and the consequent necessity for guarding against diseases has obliged us to establish quarantine stations at our seaports and make a careful examination of each vessel, its cargo and passengers, before we allow them to enter. To-day the commerce of the world is enormous, opportunities for infection and the spread of diseases are practically unlimited and we must even interfere with commerce to save ourselves. It is therefore apparent that our health officers and our law-giving bodies have had many new and complex problems to solve and are obliged to pass upon new ones almost every day.

As might be expected, we find little uniformity in public health legislation in our many States. Some few have gradually developed, and by passing new statutes as the occasion required have built up a fairly comprehensive system. Others have created a State Board of Health, given it small powers and less funds and accomplished but little. Many are now awakening to the importance of the subject and are ready to put in force laws which will be of great and lasting benefit.

The health laws cover a wide range of subjects, including the protection of public water supplies, the control of contagious and infectious diseases, the disposal of sewage and pollution of streams, vital statistics, nuisances, vaccination, and many other topics. No attempt will be made here to speak of any other than those immediately concerning the State Department of Health or local boards, and references to the Public Health Law generally should be understood as excluding the other provisions which deal with subjects we are not called upon here to discuss.

THE LEGAL AUTHORITY AND THE POLICE POWER

Having attempted to give you some idea of the field to be covered by the law, let us see where the legal authority is vested and how it is exercised. As we have in the United States no National Department of Health and therefore no branch of the

nor shall any state deprive any person of life, liberty or property without due process of law nor deny to any person within its jurisdiction the equal protection of the laws."

but it has frequently been held that this amendment does not abridge or impair the exercise of the police power of the States and apparently the principal purpose of this provision is to prevent any arbitrary interference by State authority in the rights of person and property and to secure to all happiness unrestrained except by equal and impartial laws. No greater burdens may be laid upon one than are laid upon others in the same calling, and in the administration of criminal justice no different or higher punishment shall be laid upon one than is prescribed to all for like offenses.

The police power may be used to regulate the use of property, and the protest that is so frequently raised in regard to the exercise of many of the health laws, to the effect that this is a taking of property without due compensation, cannot be sustained. For while the owner is restricted in the use of his property it is not appropriated and in the theory of the law he is compensated by sharing in the general benefits which the requirements are calculated to secure.

But while the Legislature can pass laws needed to protect the public health and the courts cannot review its discretion in this respect, these laws must have some relation to the end to be attained, for the rights of the citizens cannot be invaded by the Legislature under the guise of a police regulation for the protection of health. Where it appears that that is not the object of the statute and no matter in what language the statute may be framed, its purpose must be determined by its reasonable effect and it cannot impair or destroy rights secured by the fundamental law. The Legislature can pass laws to prevent injury to the public but they are, of course, subject to review by the courts and they cannot go beyond the necessities of the case. Many interesting and conflicting opinions have been rendered in our courts upon the intricate questions involved, which I shall make no attempt to review here.

We should welcome them all for their influence is good, and the publicity attained will be of benefit to the work, but it is strange how seldom any of these associations make an effort to support or strengthen existing agencies.

I believe their efforts ought, in part, at least, to be directed to the assistance of those departments of government already engaged in this work and to those officials now struggling to promote the public welfare with inadequate laws and insufficient funds.

The statutory provisions defining the powers and duties of State boards or departments of health in the different States of our Union vary greatly, although of late years there has been some attempt at uniformity in the work and where one State Board of Health has done effective work along certain lines the others have been quick to follow. As a general rule, State Boards or Departments of Health are not vested with large powers, although there is a very widespread popular impression that they have practically unlimited authority. As a matter of fact, Legislatures have been slow to grant authority to State health officials and for years many of them have investigated and pointed out conditions sadly in need of improvement without the authority to force the desired end. The functions of a State Board of Health should be largely supervisory — the local boards of health should be so organized and equipped that local nuisances and minor matters of that character could be speedily determined by them and the State Board of Health could exercise its powers in the control of more important matters. In the prevention of the spread of epidemics of disease and safeguarding public water supplies and the protection of the stream from pollution and in countless other ways, all involving matters which no one local board of health could possibly be in a position to undertake, the State Board of Health should be supreme.

Most of the States give the State Board of Health a practically unlimited authority to investigate, but along few lines do they have the authority to make their recommendations effective. They usually are required to collect the vital statistics of the State and study the sources of mortality and the effects of localities, employments and other conditions upon the public health.

important particulars. It conferred authority upon the State Board of Health to enter into a municipality and appoint a health officer for it to perform the duties of the local board until such time as the authorities shall appoint a board that conforms with the law. It also placed under the jurisdiction of the State Board lands taken over by the State for sanitary purposes. This amendment was found necessary by reason of the experience in 1892, when cholera was in the bay of New York City. It further required local health officers to report such contagious diseases as the State Board might require.

Acting under this revised and codified Public Health Law, with occasional amendments thereto, the State Board of Health proceeded up to the year 1901. During the organization of the State Board of Health from 1880 on it had been divided into committees to whom various matters were referred and had maintained an office in Albany with a secretary as the executive officer and whose duty it was, in large part, to see that the provisions of this law were enforced. The State Board and its separate committees met at frequent intervals, usually quarterly or monthly, directed investigations and carried out the provisions of the law generally.

In 1901, by Chapter 29, the Legislature passed an act amending Chapter 661 of the Laws of 1893, creating a State Department of Health and the office of Commissioner of Health, and abolishing the State Board of Health. This act in effect conferred upon the Commissioner all the powers and duties originally held by the State Board of Health.

The action of the Legislature in abolishing the State Board of Health and creating the State Department of Health was radical and without precedent among the States of the Union. The State Board of Health had been in active operation for twenty years before the passage of this act, had done some effective work in investigations, in the control of diseases, protection of the public health, etc., the importance of which can hardly be overestimated. It is a fact, however, that the organization of the State Board as it existed necessarily very frequently delayed prompt action upon the various matters before it and it is safe to assume that the action of the Legislature in abolishing this State Board

are, of course, operative only within the corporation limits, but they cover an extremely wide range of subjects. The charter of the city of New York provides for the organization, authority and duties of the City Department of Health, and gives it wide powers and authority to control all matters affecting public health. We find in New York City a high development of public health work, and a splendid organization which has accomplished much, difficult as the problem is. The Sanitary Code of the city of New York contains several hundred provisions, all having a bearing upon some matter relating to public health. These ordinances must of course be reasonable, consistent with the charter and with the legislative policy of the State, and not discriminating in their operation. They usually fix a penalty for their violation. The scope of these ordinances of course varies widely in different States and in different parts of the country and some of them are very curious and very interesting. In New York State there are over 1,400 local boards of health each having local ordinances and regulations, in addition to our laws.

Municipal control is extremely important in the consideration of this subject as the municipal ordinances having the force and effect of law come very close to the people and must be constantly observed. The housewife who is hauled into court for leaving the garbage can upon the sidewalk and the man who is fined in the police court for spitting in a street car, both learn to respect health regulations. All kinds of business are regulated, unhealthful and unwholesome foods are seized and destroyed, offensive trades are banished from the city, and the keeping of animals is carefully regulated.

DEFECTS IN OUR LAWS

While an attempt has been made to point out the progress there has been in legislation as affecting public health, no one should infer that we have developed anything approaching a perfect system.

Public sentiment has been slow to crystallize in favor of sanitary reforms, and such legislation as we have had has usually been brought about by the work of a few enthusiasts rather than from force of public opinion.

avoidable epidemics of disease and unnecessary sickness and death in many places.

The power now vested in the State Commissioner of Health to investigate and recommend is well enough, but fails of its purpose in many instances. Not long since the department recommended that a village take steps to clean up its watershed. Through the almost criminal neglect of its board of water commissioners this was not done, and as a result there was an epidemic of typhoid, with over 70 cases and 20 deaths. The expenditure of a few hundred dollars would have saved this. The dangers of neglect are not confined to any locality, for every citizen of the State is affected and may suffer.

Our laws regarding the pollution of streams need a thorough revision if effective work is to be done. To attempt to point out all the needed changes would be fruitless. You are all aware that in many important respects these laws need revision. We hear a good deal about needed changes in criminal law; the State has revised its banking and insurance laws; and any legislation affecting a commercial interest, or our financial supremacy, is carefully considered, but the Legislature with a few exceptions is indifferent to the needs of public health. Worse than this, they are not willing to be guided by those who should know what needs to be done along these lines. Ours is a great State in many ways, but not yet great in its care of the public health.

The educational work that is being done will effectively arouse the public, and we shall then have the legislation we need — but not until much needless sickness and death have been caused. Every man here should do his part to see that the Legislature realizes that public health questions are entitled to proper attention and consideration.

Our duty is clear, we must exhibit the interest we feel and show it effectively. We need, more than any spasmodic reform, that high ideal of citizenship and its opportunities which will place our public affairs on a higher plane, give us better qualified officials, more intelligent consideration of the wants of the people, and a better understanding of our own needs and responsibilities.

And in the place of general indifference we must have an active and hearty public support of earnest and intelligent public

No man realizes the need for improvements, and no man with a given degree of intelligence is more likely to discover suitable methods of improvement than the man who is brought into direct contact with the thing which is to be improved. Then, the statements that Mr. Seymour has presented to you are worthy of your earnest consideration and, if I had time to dwell upon this, I would like to go over the subject item by item. But I wish to say that the importance of having the hearty co-operation of every citizen of the State cannot be too fully emphasized, and the importance of having the hearty co-operation of every health officer of the State is also important; and although it is true that, as President Schurman said, you do not know much, and that for ignoramuses you make a pretty attractive bunch, it is true that high as President Schurman's ideal is, and fully as we all recognize it, and would be glad to attain to it, yet for the present and to-day, the best we have is the humble health officer plodding on as best he can. And in his little community there is a bunch of taxpayers who have accumulated something of this world's goods, and they believe that old fool of a doctor knows something. And they are influenced to a degree by what the health officer says, and because that is true, it opens to you a field for action. It gives you an opportunity to say to your individual patients and taxpayers and assemblymen and senators, "Men, the time has come for us to rise in our might and do our best. And in our respective spheres strive to do away with some of those preventable diseases which have made us share with others the sorrows of untimely death, and made us partners in the great national losses which have come as a result of inefficiency in our health laws."

THE CHAIRMAN — The next paper is by Dr. Marshall L. Price, Secretary of the Maryland State Board of Health, on "The Registration of Tuberculosis."

Our tuberculosis laws, I am sorry to say, are not being carried out as they should be, and I know you will be glad to hear Dr. Price speak on this subject. Then you will understand the point I made, that New York is not, as it should be, the foremost State in the world in this field of work. Dr. Price has come from Baltimore to explain how he has carried on his effective work, and I am glad to be able to present him to you.

the present day by comparing the attitude of the same class of officials and the public in the past, toward the registration of the acute contagious diseases.

In the United States registration has been of comparatively recent growth, and its progress has been difficult and slow. The reasons for this are, I think, not hard for any student of national life and customs to fathom. Registration, like other sanitary advancement, is particularly the product of civilization, and the United States has not been in the past a highly civilized country, nor are the Americans now a wholly law-abiding people. I am not lacking in patriotic pride for my own country in making this statement. The general public is prone to regard the term "civilization" as synonymous with high mental and moral development, and this mental confusion has also clouded the minds of some of the historians. History does not bear out this view. Civilization must be regarded merely as an intensive and specialized mode of life, and many distinctly second grade nations have established comparatively high civilizations. A pioneer race such as the Americans, fully occupied with the struggle to maintain individual life and the perpetuity of the race, against human enemies and the hostile elements of nature, could not be expected to devote much time to the problems of how to make life more happy and prosperous; and it is really only in the past few generations that the nation as a whole has taken up the serious consideration of these problems. The vigor and strength of the American people has proven that it is not always the most intensive life that makes for the highest development, and the nation which has like all pioneer nations been wasteful of its natural resources and indifferent to the value of human life has now entered on the second phase of its existence and is now developing what we hope will be the highest civilization of the world.

In the registration of tuberculosis and its legal regulation, the United States is far in advance of the older countries as anyone must acknowledge.

To show that the registration of communicable diseases, even of the chronic communicable diseases, is founded in ancient custom and is not a novel or radical idea, I will cite an example from the sanitary laws of the Book of Leviticus (about 1500 B. C.).

To illustrate the attitude of the mediæval officials and public toward the registration of communicable diseases, I will cite the ordinance passed by the Lord Mayor and Aldermen of the city of London which went into effect July 1, 1665. It will be noticed that the notification of communicable diseases in mediæval times was generally enforced only after an epidemic had appeared and had done all the damage possible. This attitude of mind still seems to linger in the minds of many of our law-makers and officials, not to mention a certain class of the medical profession. This fine old classical example of locking the stable door after the horse escapes reads as follows:

“The master of every house, as soon as any one in his house complaineth, either of blotch or purple, or swelling in any part of his body, or falleth otherwise dangerously sick, without apparent cause of some other disease, shall give knowledge thereof to the examiner of health within two hours after the said sign shall appear.”

The ordinance in which this section appears was passed under the authority of an act of Parliament entitled “An Act for the Charitable Relief and Ordering of Persons Infected with the Plague.” As already noted, this ordinance was passed and enforced when the epidemic of plague was widely disseminated in London, and when it consequently could not have been expected to accomplish very much good.

It was only to be expected that the persistent opposition which appeared when the first attempts were made to register the acute communicable diseases should reappear, though in lesser degree, when the registration of tuberculosis first became established in our statute law. Practically the same arguments were advanced against the registration of tuberculosis which were advanced when the registration of the acute communicable diseases were first provided for by law. I have already cited the old mental attitude toward the registration of communicable diseases, but as all these old arguments have been advanced as new, it is well that we take them up in their special relation to tuberculosis. The arguments against the registration of tuberculosis and the opposition to measures of control fall under two heads: First: General opposition from the public. Second: Special opposition from the medi

law ain't no good. It's nothing but a fad. I guess what was good enough for my father and grandfather is good enough for me."

I hope I have sufficiently shown that the alleged public opposition to the registration of tuberculosis is largely a figment of the imagination. This leads us to the really serious obstacle in the registration of tuberculosis, namely, indifference or opposition on the part of the medical profession. The source of the most serious difficulty with the medical profession is the code of medical ethics or rather a perversion of that code. In the relation between the patient and his physician, our code of ethics, and indeed the statute law of many States, recognizes that certain information which comes to the physician through his professional relations with the patient, must be held inviolate. This we must recognize, but within certain limits only, as a just and proper law whether written or unwritten; but it is bad ethics and bad law to hold, the individual's rights superior to those of the State. If the code of medical ethics holds that "the rights of the patient are always supreme over those of any other individual, class or community," such a code is a bad one and should be substituted by a more civilized code, namely: "The rights of the community are always supreme, the rights of the patient are only supreme as long as they do not involve danger or damage to the community." The "reductio ad absurdum" of such a code would be to hold that, as far as the physician is concerned, no one but the patient has any rights which the physician need consider; or that to guard his patient against the trivial and generally apocryphal injury of registration, the physician is justified in sowing disease and death among the innocent individuals of a community. The best remedy against this state of mind is to provide by stringent statutory enactment for the secrecy of the records and against their improper use. This provision is in the Maryland law and is also in the laws of New York State. It is thoroughly enforced in Maryland, as I hope it is, and will be in New York. I have been prepared in my own State, when records of tuberculosis were demanded by the courts for legal purposes, particularly in civil suits, to employ a lawyer and to defend the secrecy of the records to any extent short of going to jail for contempt. I merely mention this because all health officers are not equally careful. In

All the members of a licensed class are prone to hold the erroneous view that the licensing of their trade or profession is done for the benefit of the class, and this view is held by many practitioners of medicine. Nothing could be farther from law or common sense. Although I have before stated my views on this subject, I feel that this mental attitude is such a real obstacle to the registration of tuberculosis that it can do no harm to repeat them. The Constitution guarantees to each individual the right to earn his livelihood according to his own interests and desires. The restriction of an occupation for the benefit of the class is clearly unconstitutional and no individual can be restrained from pursuing the occupation which he elects, unless it can be shown that the pursuit of such an occupation by unskilled persons involves the community in special dangers. For this reason a number of skilled occupations are licensed, because their practice by unskilled persons would involve individuals or small groups of persons in dangers from which they (the individuals), not being specially qualified to pass upon technical knowledge and skill, would be unable to protect themselves. Certain other pursuits must be classified as "dangerous occupations" because their practice by unscrupulous and unqualified persons would necessarily involve the whole community in danger. It is in this latter class that the medical profession properly belongs.

The term "license" thus implies special privilege and special restriction. In the issue of the license by the State there is an implied obligation on the part of the State to accord certain privileges to the licensee and an implied contract on the part of the licensee to obey the laws of the State, and to give the State the benefit of his special knowledge. The State does not license any person to violate its laws. In this particular instance the physician is licensed to pursue a dangerous occupation involving the handling of certain dangerous materials, to wit, infectious diseases, only upon condition that he handles them in a manner conforming to law. The physician is no more at liberty to handle these diseases according to his own whim than is an engineer (a member of another class usually licensed), who has the privilege of bringing dynamite into a village, to make a bonfire of it in the public square.

that section of the law. So, I think by careful examination of the law, you will consider that the health officer is given the power to do all that is necessary to carry out the procedures and the precautions in homes where there is tuberculosis.

Now, in regard to the educational side of this case: As promoters, it is not our desire to interfere with the work of health officers, but to co-operate with them and educate public opinion, and health officers in the cities where we have been will testify that is the work we have done. We create a public opinion which gives more respect for the health officer, and the most important arm up there of the government is the arm which deals with the health of the community and the lives of the people.

DR. ———— I have had occasion to visit a family reported to me as having tuberculosis. A member of this family felt they should not be encroached upon. She was sick and it was nobody's business but her own, and she did not see why the matter should be made public. I told her it was not made public; I came to see her, as the case had been reported to me, and it was my duty to come and counsel her, and not to meddle with her private affairs. She was an irritable woman, and I had great difficulty in soothing her irritation. She was unwilling to comply, but she finally consented to use the means which I had acquainted her with. She told me there was a family not far away from her that had tuberculosis, and asked me if I had visited them. I said, "No. Do you know they have tuberculosis?" She said she was not sure, but she thought they had as they were poorer in flesh than she was. At any rate, she became reconciled later to the requirements of her situation.

I think an embarrassing situation exists there, namely: That if the health officer, while he makes a record of the case must conceal that record, must avoid making that thing public, and has to report it—now whether that is publicity or not may be a question that the patient may bring up; and if it is made public he is subjected to prosecution for a misdemeanor.

Now, it may be that many health officers and boards of health may be at a loss to know how far the talking of these things and reporting of them subjects them as individuals to an action for violating the law and subjecting them to a fine of \$100.

I am at a loss to know in this case of this woman that I called upon; I did not see any record anywhere that I had the right to enter upon this family. The case had not been reported to me, and to-day, while this does not constitute an infringement of the law, that would not be safe for me to undertake. This case is in Kendall, Orleans county, of which I am the health officer.

THE CHAIRMAN — I think Mr. Kingsbury and I had better get our heads together and prepare a circular covering some of these matters. Something which the doctor can put in the hands of the patient, and not give the health officer all the blame for construing the law himself.

DR. ———— I believe in the suggestion of the committee, that someone should be appointed to look into the law and make timely recommendations. Many things in the law can be met with advantage. I know the health officer is in duty bound to enforce the law. But any municipality that does not give sufficient funds to enforce the law is in itself guilty of a misdemeanor. In Buffalo we had some difficulty—the board of aldermen would not give us the inspectors and the clerks necessary to see to the enforcement of the law. Finally, after several months we threatened to mandamus the board of aldermen to provide the means to enforce the law. They then gave us \$5,000 to enforce the law. We have lectures and circulars in four languages, and we see that the law is enforced. The only thing is: do not be afraid of enforcing the law. When you find a case of tuberculosis see that the patient does what the law demands. Do not hand him a circular and think you are t^h with him. If you cannot see him again, send an inspector or a distr there every two weeks, and see that he takes precautions not to i

members of his family and the neighbors around him. With this law should know all the tubercular patients we have in the State of New York.

Our inspectors every day see the cases and they investigate the homes, and if the conditions are found to be insanitary, they make a report to us, and the inspector goes there and sees that the room is changed, or that ventilation is given, or we go to the workshop and see the managers and employers of the men and they are generally willing to co-operate with us.

Above all we must not be afraid to act. And in the course of time we will have a very good state of affairs indeed.

THE CHAIRMAN — The Conference will now adjourn until 2 p. m.

THURSDAY, NOVEMBER 11, 2 P. M.

FOURTH SESSION

SECTIONAL MEETINGS

Presiding, ALEC H. SEYMOUR.

THE CHAIRMAN — Gentlemen of the Conference, there was one paper on our program this morning which could not be taken up. It is by Prof. Ogden, and will treat of the Cornell Sanitary Laboratory.

THE CORNELL SANITARY LABORATORY

By H. N. OGDEN, C.E.

Special Assistant Engineer, State Department of Health

I had this morning a carefully prepared paper, and what I hoped was a most eloquent speech in relation to the State Hygienic Laboratory at Cornell University. I had expected to speak anywhere from one-half an hour to one hour, describing in glowing colors the possibilities of that laboratory. But now when I am treading on the time assigned to other speakers, I am warned that I must be most brief, that I can only have a few minutes to tell you what we are trying to do in that laboratory.

I have traveled back and forth over this State for the Department of Health now for three or four years, and I am more and more impressed with the size of the State the more I travel. Whenever I have to go from Ithaca to Olean, Salamanca or Jamestown, or strike that local train that runs west from Hornell, I wish the State were compressed into one-half its size, and when I take the Delaware & Hudson train from Binghamton to Albany, I want to cut the State in two. The State is too big for a man that has to travel very much over it.

You, as health officers, who have had occasion to send samples of water to Albany, or specimens of sputum or blood, or any other object for analysis or determination, have also regretted the size of the State, owing to the time necessary to get results from that examination.

Only yesterday I was talking with a gentleman from a certain part of the State who had sent a sample of water to Albany, and

would like to put myself at the disposal of the health officers who would care to come to Ithaca, to see how the work is done, and to find out why the water is said by the chemist to be bad. We sometimes do not believe the chemist, but if we could see his process, and on what he bases his conclusions, we would have more respect for his conclusions. That is the laboratory we are starting, the Sanitary Laboratory of Cornell University, that is at the service of the health officers in that central district, limited by the counties which I have mentioned.

THE CHAIRMAN — The State has been very fortunate in securing the services of Dr. Howe as its chief medical expert. He is going to talk to you this afternoon on the "Prophylaxis of Communicable Diseases."

DR. WM. A. HOWE — Mr. Chairman and Health Officers, I feel more like getting down among you, on the same level with you of the floor, where I have been for twenty years. It seems to me, coming so recently from the ranks which you yourselves are gracing, that I would like to touch shoulders with each of you. I feel more like having a good hand-to-hand shake, a good heart-to-heart talk with the health officers of this State, than I do like presenting my carefully prepared paper.

Now, my one desire and ambition, as a member of the Department of Health, will be to meet so far as possible every health officer of the State of New York, and, wherever possible, to lend every personal and official assistance I can to assist them in adjusting their local differences, and to improve their service to the people they represent.

To some it might look as if we were either unable to meet the situation, or indifferent as to its fatal consequences.

To the medical profession it might be a sad reminder that as yet there has never been a united effort among its members to stamp out these destructive diseases.

To the health officers it might furnish abundant justification for the adjustment of many petty local feelings which often impair the hygienic welfare of a community.

To our Governor and our legislators, who have been so kindly disposed to supply funds with which to guard the health of the people, it might be a further incentive to even more liberal financial encouragement. With the public, already so widely and wisely concerned in matters of health, it might well arouse a determination to take a more active part in this struggle for self-preservation.

Be this as it may, the barren fact remains, that death from preventable diseases is each year staring into the hopeful faces of over 22,000 helpless people in our State.

What is the remedy?

Are the people willing to see us, or are we as health officers and physicians going to be content to sit down and meekly view this gigantic funeral procession as it passes through our midst?

Are we going to acknowledge defeat by this grim conqueror even before the battle has scarcely begun?

Are we going to admit that the combined energies of the sanitary forces of the State, the medical profession of the State, and the people of this proud State, are helpless before the invasion of communicable diseases?

Such does not seem possible, nor should it be.

What we need and must have here is a union of forces, before whose combined energies these diseases could not long endure.

Were this accomplished, do you think it would take us long to suppress ophthalmia neonatorum, a disease apparently so easily prevented?

With this union army as it were, waging a war of extermination on disease, how long, under the leadership of our energetic Commissioner, would it take to revolutionize the vital

part of us, and are welcome among us. That to them as well as to us will belong the final credit of success.

Get them to resolve with you, that however brilliant may seem the achievements of the past, they will pale into insignificance under the united forces of the future.

Abolition of the common drinking cup.—The common drinking cup, so long in use in our schools, our churches, our public buildings and institutions, our municipalities, our railroad cars, and elsewhere, is to my mind one of the most prolific sources of spreading certain communicable diseases, particularly tuberculosis. This relic of the age of infection can and should be abolished. You as health officers can do much to accomplish it, and it is plainly your duty to wage a war of extermination against this menace to public health.

The clinical thermometer, a source of danger.—Practically all of you are in general practice, and are the busy men of your locality.

In most instances you represent the most advanced thought, not only in modern sanitary science, but in the profession to which you belong. As general practitioners, as family physicians, or as health officers, I would like to ask:

How many of you as a routine practice use more than one clinical thermometer in your daily work? How many of you use more than two?

How many of you have ever used a thermometer in the mouth of a patient, which you would not put into your own?

How many of you have had a patient hand this instrument back, with a polite request that you again cleanse it?

Do we not as physicians owe as great care in this matter to our confiding patients as we exact for ourselves? Are we always faithful to this trust?

A few years ago, Dr. Conklin of Dansville, assisted by Professor Dodge of this city, conducted a series of experiments with thermometers cleansed by the methods ordinarily employed. The result of this investigation was subsequently given by Dr. Conklin before the Central New York Medical Society, and clearly showed that this indispensable instrument is liable to be a frequent carrier of germs.

of the brightest and ablest minds of the age. Like the fresh air of the heavens, it is God's means, placed at the disposal of the human race, and is but another of His wonderful blessings. It is but the corner-stone on which we must eventually build the superstructure of our sanitary laws.

As physicians, as teachers, as advanced thinkers, as custodians of health, as firm believers in its possibility of accomplishing wonderful things, we should welcome its coming, and spread its blessings.

Unless we can find some reliable means by which we can destroy the insidious bacillus outside the body, or render it inert after it gains admission to our system, we must continue to struggle against mighty odds.

With tuberculosis, more than with any other communicable disease, prevention means most to the ultimate success of its extermination.

Unless we can stop the multitudinous exposures which are occurring daily, we cannot hope to prevent the incipients, nor to find ourselves without the more advanced cases.

Let us therefore strive first to prevent, but failing in this let us learn to find our cases early and then, if possible, cure them.

Let us all unite in a common endeavor to locate and register every case of tuberculosis within the State.

Let us educate the people from childhood to manhood as to its dangers when carelessly handled, and inform them as to its comparative safety under proper management.

Let us advocate the location, throughout the State, of suitable sanatoria, in which cases of varying stages can be segregated, and receive the latest and best attention.

Let us favor such legislative measures as will best enable this work to be carried on most advantageously.

Let us advocate State or municipal inspection of our schools, our churches, our public and private institutions, our railroad cars, our factories, in fact all buildings in which many persons assemble, to ascertain whether or not conditions exist which may jeopardize the health of our people.

Ophthalmia neonatorum.—The long continuance of this needless calamity among the children of our proud State should bring

they are practically valueless as preservers of health, unless we can execute their enforcement.

The law directs or commands that we shall quarantine scarlet fever, measles and whooping cough, and yet how many physicians are there in the State who are to-day absolutely indifferent to its mandates, in respect to one or more of these diseases. We can never hope to save the 3,365 young lives which are being sacrificed each year to these three diseases until we and the people learn to more fully appreciate their imminent danger, and to handle them accordingly. The time has come when we must abandon the ancestral fallacy that these so-called children diseases are harmless, and should, therefore, be had by our children while they are young. As a matter of fact statistics tell us that we lose each year far more from this source than from diphtheria itself.

Let us awaken to the situation, which you must admit is indeed a serious one.

Let us urge you to be vigilant and faithful in seeing that the quarantine laws as they pertain to all communicable diseases in your community be rigidly enforced, accomplishing which you will have taken an indispensable step in saving many thousands of lives otherwise doomed to an early death.

Typhoid fever.—During the past ten years our State has lost 16,091 of its subjects from this one source. Most of these have died in the prime of life, at the height of their earning capacity to the State, and of their greatest usefulness to their families.

In the suppression of this disease, whose ravages are each year costing our State so dearly, let us hope that you will vie with each other and through yourselves with the people, to assist the Commissioner in his determined fight against this destructive disease.

Bring to him every possible aid within your power to stop the pollution of our public waters, the accomplishment of which will do more than any other one thing to reduce the frequency of this malady.

Let him feel assured that you will wage an incessant warfare on the filthy fly, that you will guard assiduously the milk supply to your people, that you will favor legislation looking to the State

or Federal inspection of the sources of our shell fish, and that you will keep a vigil eye on all other possible sources of infection, never forgetting to employ the most drastic and effective means to destroy the typhoid germ as soon as possible after it leaves the body.

Diphtheria.— Since the introduction of *antitoxin* as a therapeutic measure in diphtheria, the deaths in our State, from this cause, have fallen from 6,448 to 2,468 per year. This brilliant result is so strikingly significant that it speaks more convincingly of the efficiency of this remedy than one could possibly write in words.

The most rapid decline in this death rate occurred between 1888 and 1898, since which time no such striking reduction has been accomplished.

To be sure the lowest point ever reached in the death rate in our State was touched in 1906. This was again closely approximated in 1908, but since 1898 the death curve has not shown the steady decline which one would naturally expect under the existing favorable conditions for the general employment of antitoxin.

There has never been a time when the State was more generous in its policy or more able to distribute to all needy and emergency cases so reliable an antitoxin as at the present, or during the greater part of the past ten years. We cannot believe that this failure to more rapidly reduce the death rate from this disease is attributable either to the inefficiency of the remedy, or to the inability of the medical profession to obtain it.

The frequent and positive tests to which our *antitoxins* are subjected leave no room to doubt their potency. Our liberal policy of distribution is certainly such as to furnish no excuse for being without them.

This continued high mortality, we believe, will not be found among those of you who are believers in the unquestionable efficacy of this remedy, but among those who either disbelieve in its virtues, or for other reasons refuse to employ it in their practice.

We hope, therefore, you will aid us in an endeavor to reach and convert these unbelievers. That while doing so you will exem-

plify your faith in the precepts of your teachings, by using this remedy of par excellence value, not only as a preventive measure, but in the early and energetic treatment of all cases of diphtheria coming under your observation.

Tetanus.—During the year 1908 we lost in this State 122 people from tetanus. This is far in excess of what it should be and will be if we can secure the general employment of the tetanus antitoxin supplied by the State. It is now generally admitted that in this remedy we have almost a certain means of immunizing an infected subject, from an outbreak of this frightful disease.

Its greatest efficacy is apparently as a prophylaxis, as which we urge its general administration.

Commissioner Porter is anxious that all health officers of the State should watch carefully their supply of both diphtheria and tetanus antitoxin. Make certain that you have a liberal amount of each on hand and that it is not too old for distribution.

He is also desirous that the several hospitals in your localities should be supplied, through you, with a reasonable amount of both these antitoxins for emergency use. With these remedies in your hands, and at the immediate command of the hospitals of the State, we feel justified in predicting even more gratifying results than we have ever enjoyed in the past.

THE CHAIRMAN — We would like to hear from the gentlemen indicated on the program for discussion of this paper.

DR. D. S. ALLEN — It is related at one time when the Duke of York called on the celebrated Dr. Abnerthy, the doctor after hearing his complaints gave the following advice: "Cut off the supplies as the Duke of Wellington did in his campaigns and the enemy will leave the citadel." This statement is an axiom. When this remark is applied to communicable or germ diseases, the question to be solved is how to cut off the supply. Until recently little or nothing has been done for the protection of the school children, children between the ages of six and sixteen. Much has been accomplished for the protection of the babies, but almost nothing for the protection of those of school age in our common district schools. While we compel the attendance, we have done little to safeguard their health.

A leaflet issued by the State Department of Health, entitled "The Teacher and Communicable Diseases" (a copy of which should be in the hands of every teacher), very justly says: "The State provides education and it is by law compulsory, it is therefore the duty of the health and educational authorities to see that the scholar suffers no impairment of health in consequence of school attendance."

In the high schools of our villages and cities there has been a more or less systematic effort made to enforce and teach some sanitary and hygienic laws. Good results have followed in controlling many communicable diseases by preventing the dissemination of infectious germs, but we ought and must pay more attention to the country school children, compelled as they are to occupy certain rooms and surrounded by environments largely of our making. It is

"inefficiency of the health officer," and the "ignorance of the medical man with regard to health matters," from one of the speakers this forenoon. But we point to our local boards to account for the health officers' inefficiency. First, he may be a coward. That would account for his inefficiency. Second, he has the silent opposition of his confreres. He goes on to do something, and the doctor will not aid him. He goes by this cesspool, sloppail, and so forth, and he never reports it. It breeds flies and the filth is dragged into the houses and into the rugs that have not been cleaned maybe for a year.

Then these doctors do not report to us one-half the cases they know of for fear some other fellow will get their patients. Further than that they do not report to us suspected cases, and especially do I refer to tuberculosis. We have knowledge which would be of special benefit to the patient if the cases were reported. I do not wish to make a speech, but I wish to bring out the idea that there is something which we each should give attention to in our several localities.

We have heard of the contamination of the waters of the State by the sewage. Very true. But perhaps we are fortunate in the fact that there is not enough water drank in New York State to cause anything in the way of disease. The chief source of trouble is the milk supply. I come from the greatest dairy county in the State — St. Lawrence. Hundreds of thousands of gallons come from there. But in other counties we find trouble is traced to the milk supply. The milk supply is the chief source of communicable disease, and if we are to exercise prophylaxis we must look to it. The milk bottle — your milkman comes to the milk depot and is loaded down with the daily supply, and he has say four hundred families to supply and one hundred bottles which he uses in supplying them. He leaves a bottle over at your house, and in exchange he gets an empty one. In your house is a case of communicable disease. The baby is ill. The mother is the nurse, cook, tablemaid and chambermaid. She washes that bottle in luke-warm water, dries it as well as she can on her apron, and the baby is given it to play with, and when the milkman comes, he takes it after she has wiped it with her apron, and he fills it and delivers it to the next customer.

DR. GEORGE STRASENBERG — I think what I have to say is brief and important. It is in behalf of the practising physician. He is reproached very much, and if the conditions were better understood, perhaps they might be more appreciated.

I am from Orleans county, and I will relate to you some circumstances which the practising physician has to come in contact with. A little help from the department will certainly help the health officers. I was notified of a case of typhoid fever. I went in and saw the man, looked at the surroundings, and saw that the conditions were quite sanitary. I told the lady in whose family one member had typhoid fever that it was necessary for me to call in the officials and clean the house. She railed against me with the utmost of her strength, and threatened me with the law, and said she knew the town would have to bear the expense, but she said, "If I put such an onus of that kind on her house" — she said, "How did you know I had typhoid?" I said, "The physician informed us. She railed against the physician then, and intimated that she would not have anything to do with him again. I had quite a time with her to allay her passion. I told her it was my duty to come and inspect her house and the outhouses. She said she would send the patient away to such and such a place. I said, "It is no difference. It is necessary that you should keep this place in such and such a condition." Now she berated this physician.

Now, Mr. Chairman, this physician has prepared himself for his profession, and it has cost him money, and he finds that this family and the other families are rising against him because he does his duty. There is a possibility that he might refrain from promptly notifying us when such things exist.

The case of tuberculosis which I referred to this morning, I failed to state in that — but this lady who is so afflicted is an educated woman and the doctor in our city, and she is as full of fire as a volcano, and you may imagine that with her fire she has determination, and I felt I could not threaten her with

SECTION A—CITY HEALTH OFFICERS

Presiding: DR. D. M. TOTMAN of Syracuse.

DR. TOTMAN — I have been requested to act by the Chair during this session, and we will proceed directly to business. I will ask Dr. Goler to assist me in the matter. As I am first on the program to present a paper—I will ask him to take charge of the discussion which follows the paper.

THE WORK OF THE CITY HEALTH DEPARTMENT

By D. M. TOTMAN, M.D.

Health Officer, Syracuse

This subject furnishes so much material for discussion that the time allotted is hardly sufficient to cover the entire field. It is, therefore, my purpose to speak only of the more urgent problems connected with the Department of Public Health of our cities. Many of these problems are of such a nature that there is a constant and increasing popular demand for their solution.

UNPOPULARITY OF PUBLIC HEALTH WORK

The first proposition which presents itself for consideration is that the work of the Department of Health is in any given municipality always unpopular for the reason that individuals, as such, are compelled to do something against their will. The public, as a whole, are not interested, and only become so when public opinion has been centered in some direct and positive manner upon a particular subject. While the health laws are always enforced for the public good, the department deals with individuals, and each case is separate and distinct in itself. The work is, therefore, ever varying, there being seldom two similar cases to deal with. In the case of the Police Department, guilty persons are cared for, also those persons supposed guilty; while the Health Department has to contend with innocent people, who feel that someone is trying to deprive them of their personal rights and liberty. Intercepting sewers, the reduction of garbage, construction of slaughter-houses, rendering establishments, etc., are all measures which do not directly interest the public. Im-

less matter to train or get anything out of that man. And that is true. It stirred up those men. They were pretty nearly ready to fight me. I said it and I meant it, and I mean it now — that after a person reaches the age of forty years, that man is hopeless. You cannot educate him in cleanliness. So I wish to emphasize this last statement because away in the future I see great things coming. “*The training of our children, who are to be our future citizens, in the elements of hygiene, with proper ideas of cleanliness, the danger of contagious diseases and the method of the spread of such diseases, should not longer be neglected.*”

ELIMINATION OF POLITICS

My next proposition is the elimination of politics. This is a delicate subject as I am aware, and must be handled with care. The most essential thing in a successful administration of any and all health work is the appointment of efficient, capable and interested heads of the various departments. These men should always be chosen upon their fitness for their work, and once chosen and having demonstrated their ability to do the work, they should not be disturbed under any circumstances. In some of the work it takes years to fully develop and train a man, and none is more capable to select such men than the health officer himself. It is a rare gift and difficult of acquirement to know men and make the proper selection for the important positions in a Health Department. The services rendered by the employees of the Health Department, to say the least, are of as much importance as are those of the Police Department; and they are exposed to dangers as they come into contact with contagious diseases and insanitary surroundings. I think that there should be a careful examination by competent authority, preferably by the State Board of Health, to determine the qualifications of appointees, who are to carry out the work of a city health department. In my opinion, the Health Department employees should be upon the same basis as those of the police and fire departments, and I would further recommend that a system of pensions should be adopted. I know of nothing that would increase the efficiency of the men connected with the health work more than the prospects of a pension for efficient and faithful work after years of service. If

of in an efficient and thoroughly equipped contagious disease city hospital. I would go further. I would include in this list measles and whooping cough. In the city of Syracuse we now take all cases of scarlet fever and diphtheria, where they cannot be properly cared for at home, or where quarantine is not strictly kept, to the city hospital. In our contagious disease hospital for the city of Syracuse during the year 1908, there were 162 cases of diphtheria cared for with 3 deaths; while in the city at large 259 cases were cared for in their homes with 22 deaths. The city hospital has everything to commend it. It is humane and is economical. For the saving of life is always a commercial asset in any community. There is nothing more expensive in a family than the care of contagious diseases and the most expensive part of it is the fees to be paid to the undertaker.

DISPOSITION OF SEWAGE AND WASTE

The next subject for consideration is the elimination of and disposal of the waste of the city. Probably the city of Syracuse has had a more difficult problem for solution in its sewage than any other city in the State of New York. About a year ago in the presentation of certain facts in reference to the city's sewage and drainage in connection with the construction of the barge canal before the Advisory Board of Canal Engineers, one of the members of that body personally upbraided me for the conditions I recited at that time. I told him in very plain language that the city of Syracuse was like "Topsy" it had just growed and that its parentage could be wholly attributed to the location of the Erie canal and the New York Central railroad. A city, like an individual, is not to be criticised for its existence. Originally the sewage of the city was almost a haphazard matter. It was built according to certain local conditions and necessities and so it grew up without a fixed general system of sewage. It is only in the last fifteen years that a general system has been adopted. That plan is now being worked out at nearly a half a million of dollars cost. Heretofore all the sewage of the city has emptied into Onondaga creek, a small stream which in a dry season is exceedingly small; hence it enters Onondaga lake which lies in and adjacent to our city. From the lake the drainage is into

other waste material from the houses is disposed of in various low-lying dumping places. These refuse dumps are visited daily by hundreds of people, gathering up the papers and every conceivable thing which they can find. It is easy to understand that this is a possible source of some of our contagious diseases. This refuse is often gathered by little children and taken to their homes, and there sorted over by these same and other children; thence taken to the junk dealer, and again sorted over; from thence it is sent to various manufacturing plants to again expose a large number of people. The thing seems to be unending in its possibilities.

RELATION OF MUNICIPAL AND STATE HEALTH AUTHORITIES

I believe that the relation of the municipal and State health authorities is a question worthy of consideration, yet I hesitate to touch upon this subject, because I believe that there is little, if any, ground for complaint at the present time. In this same connection the relation of the general medical profession to the Health Department work is deserving of serious consideration. The efficiency of the Health Department is largely dependent upon the earnest and willing co-operation of medical men. Likewise the success of the municipal and State departments is correlative, for the success of one determines to a large extent the success of the other. There is undoubtedly more or less ground for improvement and for the insuring of more cordial relations, and it is certainly true that the present tendency on all sides is for the encouragement of these relations which are in fact nothing but mutual interests.

In conclusion, let me say that no municipal health department will reach its highest efficiency without meeting and answering some of these problems which have been presented.

DR. GOLER — I have been asked to take the Chair during the discussion of Dr. Totman's valuable paper. While there was no applause during the reading of the paper, I feel that we all of us in our hearts applauded most of the things — if not all — that he had to say.

Once upon a time, in the city of Grand Rapids, I listened to a discussion which was limited to five minutes *and to the question*, and when one speaker sat down there were two or three other people ready to speak at the same time. I trust that you will not all speak at the same time, but the discussion of the subject will be limited and the ladies and gentlemen are asked to speak directly to the question or the Chairman will interrupt them. Now Dr Totman's subject is open for discussion.

DR. MCCARTHY — Then you must know that that hospital is in pretty good shape. The point of that is this: That I do not think they should be taken from their home by force and put into a contagious disease hospital, Mr. Speaker, unless they would put their own wife or child in there. If it is good enough for that, all right. If not, they should not insist upon doing it. If it were my wife or child they would not do it. If the city will supply such a place as that, all right. If they do not supply such places as that, it is all wrong, and it is the health officer's business to see that such a place as that is supplied or else not use the force. Why they should remove some of these cases I do not understand. Why we should have so much of this "fumigation" I do not understand. It is news to me why the family, where this contagious disease exists, is not visited by the health board or some person connected with it, and taught what to do in that particular case. Those upholstered chairs removed, portieres removed, those lace curtains removed from the room, the carpet removed from the room. Then the patient told not to spit on the sheets or the floor. There is where your contagiousness comes. It is from the filth. Hygiene is cleanliness or prevention. Now you cannot prevent contagious diseases unless they are clean about it. You cannot prevent them with measles if they are spitting on the floor, or spitting on some article of clothing. You cannot do it. It is simply cleanliness. The idea of a central plant for these things I do not know about, in a city like Syracuse, Rochester, Albany or New York, but it seems to me that in the removal of these things from the house where the contagious disease is to this central plant there is danger of communicating the disease. It seems to me so—I don't know; but I think there is less need of infection if there is plenty of fresh air in that room and the people are taught to be clean with it, the same as with consumption. If the expectoration—the spit, the good old Anglo-Saxon word—is taken care of there is not much danger of your consumption. Isn't that right? And it is so with the rest of the contagious diseases—every one of them—just the same way.

There is another thing I notice in passing through some of our cities—I won't mention any names—that the cities are not clean. Your alleys are not clean. There is a lot of refuse and, in the rainy weather, a lot of standing water in your alleys. I will not mention any names, but I can take you to places where, if the people can live in those places in the city, they can live anywhere. I do not know what the boards of health are doing to allow such places to exist. You say that you have to have places for your poor people. If you *will*, let them be *clean* places. Make the street department clean up your alleys.

DR. RALPH ROBINSON, Lackawanna — I have been very much interested in this paper of Dr. Totman's and also in the speeches of the two gentlemen who have just finished. One point that came to my mind, as Dr. Totman spoke, was this, more especially in the smaller cities perhaps, to have a good board of health—one that will stand behind the health officer and whatever he does. In the city which I represent we have a health board which is composed of physicians only. I think that is an almost unheard of thing. As you, perhaps most of you, know, the city of Lackawanna was just incorporated this last summer. There has been really no health board there. It is a place which has grown up very quickly and has been under the town government, and the board of health of this town has taken very little interest in the sanitary conditions. At the present time the board of health is doing all in its power to make Lackawanna a clean and healthful city, but it has a great many difficulties and difficult problems to encounter. As Dr. Totman said, I believe that education is the vital point that has got to be reached. Each one of the school children ought to be given some instruction, I believe, along the lines of healthfulness. I was interested to hear what Dr. Totman had to say about the cases of scarlet fever, and how in Syracuse, where there are cases where they are positive that they cannot keep a proper quarantine, they take the cases to the city hospital. The last month or two I have run across two or three cases where I was positive that such quarantine could not be kept. If I may illustrate: One case was in the house of a Polish

DR. F. A. WATTERS, Lockport — You all heard the doctor from Olean make the statement about the teacher in the public schools who had consumption, and reporting the case to the board of education in that town. In Lockport we have a similar case — a bell-boy in a hotel has a case of consumption in the first stages. I would like to ask what shall we do with these two cases? Shall we allow them to continue their work, or what?

DR. GOLER — That may be covered in the closing discussion if Dr. Totman wishes. It hardly seems as if some of the salient features have been covered in this discussion.

DR. JOHN EDWARDS, Gloversville — I wish to say a word relative to the contagion of communicable diseases. I think the pamphlet issued by the State Department of Health in which the teachers are instructed relative to communicable diseases is a greater factor than anything else for the prevention of these diseases. I believe that they give there that instruction — all they need — relative to scarlet fever, measles, whooping cough and kindred diseases, and which will be a great factor in the prevention of these diseases. Relative to scarlet fever, I would say that the patient ought to be isolated completely. We could have no hospital in our city and, of course, my procedure is to put a guard over the house: that is, a policeman who is not to allow anyone to go in or out of it, and placard the house "Contagious Disease." We are in the same boat with Syracuse as relates to the disposal plant. We are about to erect one. I think that the proper way to have such a thing conducted is under the State Department of Health, under their jurisdiction.

DR. H. H. CRUM, Ithaca — In regard to placarding houses I feel that it is entirely proper to quarantine a contagious disease, at least in my city, for I find that is the only way I can hold quarantine. We do not at present quarantine measles, but scarlet fever and diphtheria we do. I placard the house, although the card does not say what disease it is. If quarantine is broken the neighbors telephone me and help me. I have no inspector to follow up these cases, and the only way that I can be sure that the quarantine is held is to depend upon the kind public who are very careful to let me know if anyone doesn't walk the straight and narrow path. I have had a number of people arrested, some fined, and some stayed in jail over night, and I would never have known a thing about it had not the house been placarded.

DR. TOTMAN — There is very little that I will take up your time with, except the matter about the removal of patients to the city hospital. My paper presupposes absolutely that the city hospital should be efficient and a proper city hospital. And no question about that. Not a place for exploiting graft and doing things in crooked ways — not a bit of it. But a city hospital. We have one, I believe, in Syracuse, and while three or four years ago we had a great deal of trouble in getting patients there, now people want to go into that hospital, and children cry when they are taken out by their own mothers. If that isn't a proof of the efficiency of it, I don't know what is. Now I want to tell you how popular you can make it. This summer one of our prominent physicians acquired diphtheria. He, of his own accord, went to the city hospital. Dr. Halstead, another specialist, in treating him innocently for a sore throat, acquired diphtheria, and Dr. Halstead went to the hospital, and the words of praise that those men gave us were worth the whole thing.

Now as to quarantine of diphtheria, I would not take out at the present time people where they could take care of their children properly, but I want to say that during this last spring I visited during two days some thirty-nine cases of scarlet fever in the city. I went to every house to see what they were doing. They were in fine houses and among the better class of people generally, and how many did I find with a nicely prepared room out of the thirty-nine cases? How many? We have preached it, talked it, begged for it; we have sent men to help do it, to fix up a room. How many did I find? I found four where they had a place decent to keep a case of scarlet

THE ORGANIZATION OF A CITY HEALTH DEPARTMENT

By GEORGE W. GOLER, M.D.

Health Officer, Rochester

The organization of a health department should comprehend an elastic and business-like arrangement of the department, so as to permit the orderly notation of the data of health and disease ready for instant reference and use, and the notification of that data to the physician and to the public.

Public health organizations were originated for the control of disease, the collection of vital statistics, *i. e.*, mortality statistics, for the control of nuisances, and the removal of wastes in their relation to disease. Our inquiry, therefore, is directed to the best means of doing the work of preventive medicine and for collecting and filing useful statistical matter relating to disease, and to health. To do this work, it is necessary that both order and discipline be preserved so that at any moment we may have this data readily at command in a form so that the physician or the layman may understand the problems which we as sanitarians have to demonstrate to them. As the subject-matter of this paper is so broad it will be dealt with generally rather than in a specific manner. In doing so I shall divide the subject into several heads, taking as a basis for the organization of a health department the work that is done in the city of Rochester, believing that although this is a large city, yet the manner of organizing the work in our department is such that it may be taken as a basis for the organization of a department no matter how small it may be.

VITAL STATISTICS

The manner of collecting marriages, births and deaths has been prescribed by statute. The entry of this material in a combined index and ledger may be carried on as in the forms here illustrated. The certificates of vital statistics are of priceless value for legal and social purposes. The good name of a woman, the

corresponding in color with the placard, the names of school children in the house are ascertained, and the school the children attend notified on a printed form not to receive them until the expiration of the isolation period prescribed by the ordinance. When inspection cards of any form whatsoever are received at the office whether they relate to nuisances or infectious diseases, they are handled in the same general way. Wherever a contagious disease is noted, an abstract is made in a counter register, including date, street and number, name, time at which the period of isolation will expire, so that telephone and counter inquiries may readily be answered without having to go to the files, and so that the period of release may be noted and the inspector be furnished with the slip for the removal of a placard and the cleaner, and wherever the family insist upon it, the disinfectors may clean or disinfect the premises. Early in the morning cards that have been filled out with the previous day's work are collected by the clerk, the slips removed and pasted in the book by him, the cards referred to the health officer, who initials them, makes any necessary inquiries and then makes orders for the abatement of nuisances under the health ordinances. These orders are made on the back of the original card, these cards are then transferred to the stenographer, who makes the orders for service in duplicate on a prescribed legal form, stamps the card with the date of the order, and returns the cards to the clerk, who, before filing them, marks the copy of the order returned by the inspector with the date of reinspection, after the order has been served according to law. When the time for reinspection arrives the duplicate order kept in a separate file is given to the inspector, who makes a reinspection, and returns the paper to the clerk of the health office with his notation upon it. If the order has been complied with, it is stamped "abated" and filed away with the original form in the card catalogue. If the nuisance has not been abated, it is referred to the health officer, who initials it, making any necessary notation on the card, stamps it "Attorney," and it is sent to the corporation counsel for prosecution.

All data in the office, except vital statistics and milk inspection, are filed under street and number; for the location of a complaint and not the name of the person upon whose premises the com-

ferred to a dispensary, many cases to the clinics of the Rochester Public Health Association, without whose aid this work would have been impossible of performance.

MERCANTILE INSPECTION

Those children between fourteen and sixteen years of age who are compelled to go to work are required to comply with the statute relating to mercantile and factory certificates. The law requires these children to be in good physical condition. Every child applying for permission to work is weighed and measured by the mercantile inspector, and if any marked departures from the normal are found by him, the child is referred to a medical officer for examination. All data relating to the child are filed on a card. The nose, throat and teeth defects are charted on the card, and the child required to have these, or any other defects remedied before the certificate is granted. The child of parents financially unable is referred to the clinic of the Rochester Public Health Association.

FOOD AND MILK

For the inspection of restaurants and bakeries a score card is being designed, and these establishments will be scored on the basis of one hundred.

Dealers of milk are licensed, and each milk retailer is required to exhibit a sign on his wagon or in his store. For the inspection of dairies score cards are used, a card of a somewhat different character being provided for milk producers. These score cards are filed, the essential points being entered in a tally book for ready reference. Every producer and dealer receives a personal letter.

Two milk inspectors collect milk samples for chemical and bacteriological examination. These samples are received by the chemist, who refers them back to the office for prosecution if a violation of the milk ordinance is found.

TUBERCULOSIS

A clinic for tuberculosis is maintained at the health office where patients in any stage of the disease may apply and may be cared

where I found it, and it is an awful task to learn to be orderly, but it is simply the question of when one man has developed one department and another another and we have worked it over, adding something, taking away something, and have tried to build up this scheme as the years have gone on. Dr. Miles asked when a health officer does it all himself. That is what the plan is for, because he can do it so much better. You say you have not had the money. I would like to say a word on that. When I could not get money I practically said to the people "if you can't get the money, I will go out and tell some friends of mine you are too stingy to get it," and that always got the money. I want to say in response to Dr. Duryee that a telephone record is not a written record. We do not take telephone records. We require a record to be in writing.

DR. TOTMAN — We have had a good session, as I think you will all agree, and I hope this is the beginning of similar sessions another year and great good may grow out of it.

One question was asked about a teacher having tuberculosis, which was not answered. I think if I had the solution of that I would give the parents of the children in that school knowledge, and I think there would be a good vacancy there. The other was the case of a bell-boy in a hotel. That is a different thing. I think I would take that up with the proprietors of the hotel there and there would be trouble about it. These are delicate things, and we must not interfere with employment any more than we can help. I think there is a good chance for missionary work, and we must be careful about interfering with the employment of tuberculous people, but it is necessary to take care of them and it can be done.

gestion that it was so mild that quarantine was hardly advisable for the enforcement of measures too severe and rigorous; when this physician, as a matter of course, knew that scarlet fever should be quarantined rigidly and for a specified time. Last year there were nearly one hundred cases of measles found in one town, and of these not more than twenty were reported, and only one-half of these by physicians. Yet in many cases, physicians were in attendance. One physician told me that when his families called up, he prescribed over the telephone so he would not have to quarantine. Easy conscience. In the securing and placing of placards there should be a uniform sign secured or furnished by the State. This would tend to systematize the whole process; make it easier for the local health officer to secure proper signs or placards, rather than as in many cases, being left to his own ingenuity in many cases. Some towns use but few placards, and to secure any considerable supply would be rather expensive and burdensome. If these could be obtained or furnished uniformly, it would make it easier.

5 The reporting of communicable diseases should be paid for the same as births and deaths and the failure to promptly report should be immediately investigated and prosecuted by the prosecuting attorney of the local board.

If something of this sort is not done there is placed a premium on concealment of cases.

How few cases of tuberculosis are reported in the towns. In the past year not a single case was reported in the town of Gates, and yet four deaths were attributed to that disease. This, of course, is the same condition of affairs as exists in the cities, and yet how much could be accomplished if the local physicians and health officers would only learn to treat this disease the same as they treat other communicable diseases, or rather in the light of the remarks in the previous section, treat this disease even more ideally. Why should not the people of the towns be entitled to the same protection from this disease as those living in more thickly settled portions which we call villages and cities?

How many town officers are there who have distributed supplies to tubercular patients? How many have given instructions in such cases? And yet the local health officer, being a practising physician in a town along with two or three other physicians, is

COUNTY SANITARY ORGANIZATION

BY O. J. HALLENBECK, M.D.

Health Officer, Canandaigua

About six weeks ago I received a letter from Dr. Porter saying that I was to read a paper on the subject of "County Sanitary Organizations." There was nothing to do but to obey. I do not wonder why he asked me to write on this subject, as I understand he has been plied with many questions in regard to the county laboratory and to the county sanitary association. Here is a sample of an inquiry we received from an interested party last week. This is addressed to the Bacteriological Laboratory in Canandaigua:

"Dear Doctor:

SIR:—I cannot attend the meeting in Rochester in November. Dr. Floyd Palmer, health officer, who is also interested in county laboratories will be present, and I will call his attention to that portion of the program indicated.

In talking over the matter to our people, I have been asked to show the results in some county where the laboratory has been established. The majority of the people here do not appreciate work of this kind, and it is rather hard to get started."

Now, the way we got started was to start. It was during an epidemic of diphtheria in the winter of 1905-6 at the Ontario County Orphan Asylum that I became especially impressed with the inadequate means at our disposal of waging war against the enemy. The State Department at Albany was ready and willing to give us the bacteriological examinations of those cases that came within its jurisdiction, but our base of information was too remote to give us in time that scientific information which was due us both as physicians and patients. This epidemic was stubborn and expensive. I became convinced that a bacteriological laboratory and a competent bacteriologist near at hand would be potent factors in subduing the epidemic. I studied the problem also from a financial point of view, and I became convinced that if every co in the State had its own bacteriological laboratory, and u

only in diagnosing diphtheria, tuberculosis and typhoid fever, it would be a profitable investment for its taxpayers. The citizens of the county are the beneficiaries, therefore the expense should be borne by them, through their board of supervisors. Gentlemen, you are the ones who are to educate the people in these matters.

Are we leaders or are we being lead? Are we being pushed along by the demands of the age in which we live, grasping only at the thorns that are thrust at us, prodding us on to duty, or are we vigilant and far sighted to anticipate the necessities that are in the not far distant horizon? The position of health officer is a position of opportunities. By virtue of the office which is held by him, he is frequently called upon to discharge duties that are not agreeable, but are of vital importance. Questions bearing on the liberties and the rights of people have frequently to be decided at once. To err in judgment may be to permit an epidemic to spread, or on the other hand to quarantine unnecessarily. When personal rights are interfered with, or changes are directed involving a monetary consideration, the health officer is often strenuously antagonized, although an epidemic may be averted or an insanitary condition remedied, much to the benefit of the party interested.

Good, mature judgment, together with the executive ability to carry out the conclusions arrived at, are the prime requisites of a successful health officer. Since we have so many different and difficult duties to perform, where so many parties are vitally interested, even to the extent at times of depriving them of their liberty, confiscating their property, or compelling them to expend money to abate a nuisance, we would be stronger officials if we could be schooled by the views and experiences of our co-laborers.

In order that this course of reasoning might be carried out to fruition, two things it seemed were necessary, viz.: We must have a County Sanitary Association, and a county bacteriologist. Ways and means were instituted to effect the former organization.

The matter was first brought up before the Society of Physicians of the village of Canandaigua in January, 1906, and also before the quarterly meeting of the Ontario County Medical Society in the latter part of the same month. The propositions were

Building Equipment and Supplies

The building used as a laboratory has begun to show some signs of wear, viz: the putty has fallen away from some of the window panes, and the frames of the windows need paint. The plastering inside shows the accumulated smoke and dust of three years, and would be improved with washing. Aside from these minor particulars the building is in good repair. A new screen door should be supplied, as the one now in use is badly warped and can not be tightly closed. It will be seen from the financial report that there is sufficient money at hand to defray the expense of these repairs. There have been no additions to the permanent apparatus, and no repairs needed. Supplies of glass, chemicals, etc., have been purchased from time to time, and there is money at hand to pay all bills so incurred.

Financial

The balance to the credit of the laboratory at the last annual report was \$23.47. The receipts for the past year have been as follows:

October, 1908	\$6 20
November, 1908.	4 00
December, 1908.	12 25
January, 1909.	11 85
February, 1909.	20 00
March, 1909.	10 25
April, 1909.	14 30
May, 1909.	5 25
June, 1909.	18 25
July, 1909.	10 75
August, 1909.	19 85
September, 1909.	12 00
<hr/>	
Total	\$144 95

The expenses were as follows. At the February session these bills were audited and paid:

Bausch & Lomb (supplies)	\$30 50
H. I. Davenport (supplies).	16 88
<hr/>	
Total.	\$47 38

At the present session are presented the following bills, viz:

Bausch & Lomb (supplies)	\$20 31
H. I. Davenport (supplies).	64 75

Milk chemical, 3.

Faeces, 4.

Chemical, 4.

Stomach contents, 4.

Unclassified, 3.

Total, 825.

DR. BRYAN — I will not be able to discuss this paper, as my voice will not permit me.

DR. MAGILL — *Mr. President, Ladies and Gentlemen:* I was delighted to hear the paper of Dr. Hallenbeck. My short acquaintance with Dr. Hallenbeck dates back only to a very enthusiastic affair which we once attended. I think he is an ideal health officer because he is an optimist. I want you to know you have not heard anything from Dr. Hallenbeck about his difficulties. He has showed you how to do things. The observation of my life has been to see how men do things, and the men that I admire are the men that do things. I admire the German organization, where I have been trained, and the French organization where I have been trained, because of its military power. Every inhabitant of those nations is trained to efficiency and discipline — you have the order and you do it. It seems to me that the accomplishment of the order is an exceedingly simple thing. It accomplishes results and clears your conscience.

Now, on this laboratory question, the first question I asked Dr. Hallenbeck was: "How did you organize your county laboratories, and how many county laboratories have you in the State?" I think I am correct in saying there are three or four county laboratories in this State now. Dr. Bryan reports the spreading of that thing in his county at this time. I have been encouraged to have inquiries coming into the State Department asking how to start a county laboratory, and I would like to ask every health officer: What have you done to secure a laboratory in your county, and what are you going to do? I think every health officer realizes the great assistance to him in his work of such a laboratory. The trouble is they are not all gifted with this genius for organization, and he has come to show you how to do it. I do not think any county laboratory in this State is free from Dr. Hallenbeck's contact. And, as Dr. Hallenbeck has been here and told you how to do it, I hope every county will secure a county laboratory during the course of this year.

THE CHAIRMAN — We will listen now to five minutes' discussion of Dr. Hallenbeck's paper.

DR. W. G. FISH — We heard from Prof. Ogden sometime to-day of the laboratory at Cornell University for his section of the State and, if I am not mistaken, Prof. Ogden said the Department was to use this laboratory as a starter for other laboratories in other sections of the State; are we not going to duplicate unnecessarily if we have county laboratories, too?

THE CHAIRMAN — Dr. Hallenbeck will answer that.

DR. HALLENBECK — We are now in the preventive stage of medicine. Now it is up to us to prevent disease, and that is what this laboratory is for. We are getting off too far if we go to Cornell for our information. To illustrate, we had one case which came to our laboratory, a school teacher that was sick, and the doctor reported "sore throat," and she was up and around. We took a culture in the morning, and at night the result was announced from the laboratory, she had diphtheria. The family did not think we were correct. I was going to take her to a hospital and quarantine the house, when she went to a hospital, and in less than ten days she died of diphtheria. Suppose we had let that case go without quarantine. You take those chances. The only way to get at those things is to get at them correctly.

DR. MAGILL — The laboratory alluded to by Prof. Ogden is merely a portion brought for special study. At the present time that is only equipped for water supply tests, and the hope Prof. Ogden held out was that they would fill the need of that locality. But the real object of this laboratory is to start out the particular work of the State and not to answer the needs which the county laboratory fulfilled.

THE CHAIRMAN — Are there any other questions, or is there any other discussion?

DR. CARR — I am within ten miles of Cornell University, and last year we had a small epidemic of diphtheria and I took cultures from those throats, and I could not wait for results from Albany. The epidemic started from two or three cases. The physician said: "You had better report these to the health officer." I went there and took the cultures and, instead of waiting for Albany, I sent them to Cornell University, and I got results by telephone in the afternoon. That shows you the advisability of having your laboratory near at hand.

THE CHAIRMAN — I will ask what Dr. Hallenbeck can tell us about Ontario county?

DR. HALLENBECK — We have a tuberculosis hospital plan; the plans were submitted once to the board of supervisors, and the board of supervisors has had an estimate made by the architect, but the price was too high and it was resubmitted.

I have not very much doubt that this is the result of the sanitary organization of the county. I do not believe it would have been brought about as readily as this if we had not had this organization. You know, if you have a reason and you can show your people that you have something for their benefit, and you are a unit, you can carry almost anything.

Our board of supervisors said: "We will give you \$15,000 for your hospital." A site has been selected and paid for and we expect to have the building ready in the spring. You cannot afford to stand alone. Get all the health officers of your county around you and work together.

THE CHAIRMAN — I declare this meeting formally closed until 10 o'clock tomorrow morning.

FRIDAY, NOVEMBER 12

FIFTH SESSION, 10 A. M.

Presiding: COMMISSIONER EUGENE H. PORTER

THE CHAIRMAN — I take great pleasure in introducing to you Surgeon-General Walter A. Wyman, of the United States Public Health and Marine Hospital Service, who I am sure will present the subject which he has chosen in a most interesting and instructive way.

SURGEON-GENERAL WALTER A. WYMAN — *Mr. President, Ladies and Gentlemen:* In the course of my remarks I am going to refer to the hygienic laboratory of the Public Health and Marine Hospital Service, and also the Leprosy Station on the Island of Molokai in the Hawaiian Islands. In order that you may understand what I have to say about these two institutions I will pass these photographs around, and request that the last to receive them will return them to the secretary.

In dealing with this subject I have concluded that I could find no better way of giving the desired information than to simply give a review of the work of the Public Health and Marine Hospital Service for one year — last year.

The matter which I have prepared for you has never been published, and it is entirely new and I hope it may interest you. I may seem a little dull in rehearsing this, and yet it seems to me every topic touched upon must be of interest to the members of this association. In describing what we have done also, it will give to you an idea of how it is done, and the operations and the law under which the Public Health and Marine Hospital Service carries on its work.

I first deal with the subject of plague in California and on the Pacific coast, which for the past two or three years has been a very vital matter with us. You will remember in 1900 there was an outbreak of plague, and a number of deaths therefrom in San Francisco, and the Public Health and Marine Hospital Service was called upon to assist, and finally the plague was thought to be eradicated, but after the great fire in San Francisco, and the earthquake, it broke out again, and we were called upon to resume the full charge of its suppression, the State and local authorities rendering their valuable aid. We have been successful in eliminating the plague from the city of San Francisco, but the work is still going on, as the work is the most difficult of any type of diseases to root out. You may go for months and months without a case, and it will require years more of constant work taking away rats, and now and then catching an affected one, and now and then a ground squirrel, before we can be assured that the plague has been eradicated.

During the last year there was but one case of rat plague, and that was in October, 1908.

and twenty-six ranches have thus far (October, 1909) been inspected. It will be necessary to continue this work for an indefinite period until all this plague infection has been eliminated.

PLAGUE IN OTHER COUNTRIES

Plague has markedly diminished in India. For the fiscal year 1909 there were but 168,403 cases, as against 730,729 for the previous fiscal year, and more than 1,022,000 for the fiscal year 1907.

In South America the situation remains about the same as a year ago, the disease still existing in Ecuador, Peru, Chili, Uruguay, Brazil and Venezuela. No cases were reported from Argentina. In Peru 1,192 cases with 560 deaths have been reported. In the West Indies, Trinidad was afflicted with 18 cases, 14 being fatal. The menace to the United States, therefore, still continues. Of special significance to the United States also were the outbreaks of this disease in Fayal and Terceira in the Azores Islands. Unceasing vigilance will be required in quarantine administration to prevent the further introduction of this disease. Medical officers are on duty at Guayaquil, Callao, Rio Janeiro, and La Guira, and special instructions have been issued for close quarantine surveillance and for the destruction of rats aboard vessels.

TYPHOID FEVER

Three years ago the commissioners of the District of Columbia, on account of the continued prevalence of typhoid fever in Washington, requested the Public Health and Marine Hospital Service to make an investigation to determine the cause of this continued prevalence. A board was therefore appointed, and has just completed its third report, known as Hygienic Laboratory Bulletin No. 52. The board is still investigating, and will make a fourth report, which will terminate its labors. The investigations thus far made indicate that somewhat less than 10 per cent. of the cases of typhoid fever are definitely attributed to infected milk.

The three years' study have shown that in 1906, infected milk, contact, and imported cases accounted for 30.93 per cent. of the cases for that year, 48.46 per cent. for 1907 and 46.76 per cent. for 1908. The board states that it does not seem probable that

for the seasons 1907 and 1908 Potomac water could have been directly responsible for much, if any, of the infection, and there is not yet sufficient evidence for positive conclusion as to just what part this river water has played in the causation of the disease in previous years. They call attention to the frequent neglect of disinfection of excreta, and the need of legal control of typhoid fever patients, and typhoid bacillus carriers, and the necessity in general of treating this disease as a contagious disease.

These reports have an additional value in presenting a standard method of investigating the causes of the prevalence of typhoid fever in a city, which standard has already been followed by the cities of Richmond and Pittsburg. Results obtained in the different cities from operations on the same plan become comparable and of greater practical utility.

The spread of typhoid fever through the pollution of interstate waters, particularly the Great Lakes, is an important sanitary problem, requiring Congressional legislation. The service is represented by one of its officers on the Lake Michigan Water Pollution Commission, and its advice and assistance has been requested by the Niagara Frontier Pure Water Conference.

TUBERCULOSIS

The service was adequately represented in the Sixth International Congress on Tuberculosis, at Washington, September 28 to October 5, 1908, both in the administrative and scientific work, and the exhibit.

In the laboratory the presence of the tubercle bacillus in the market milk of Washington has been demonstrated, and its thermal death point determined, (60° C. for 20 minutes). Experiments to determine whether the bacillus can be recovered from the blood of affected persons have given negative results. These studies are reported in Bulletin No. 57.

Under executive order of February 26, 1906, Departmental employees have been examined for tuberculosis and certificates given.

The service has given advisory support to the Colored Anti-tuberculosis League, established, at the suggestion of one of its officers, by the colored people of the South. A working plan,

together with the constitution and by-laws and form of membership certificate, has been published in the Public Health Reports, and the movement, which now embraces seven southern States, promises good results.

At Fort Stanton, New Mexico, where the service has a sanatorium for the treatment of tuberculosis cases, with a reservation of 46 square miles, 399 patients have been cared for during the year.

While, of course, it is known that the outdoor treatment anywhere is efficacious, still the climate, the altitude and dryness of air at Fort Stanton render it particularly available for the care of these cases. But there is more than a mere care of cases in the sanatorium idea. The patients in this institution come from the merchant marine of the United States, and by being sent to Fort Stanton are removed from the forecastle and boarding houses and hospitals where they would undoubtedly infect others.

While great care is exercised in stating that patients are positively cured, we have had undoubted evidence to that effect, as illustrated by the following: Sometime ago two patients who had been discharged as absolutely cured from Fort Stanton were admitted, one in the Marine Hospital at Boston, and the other at the Marine Hospital at Chicago, for diseases entirely distinct from tuberculosis, and from which they died. The medical officers knowing that they had been discharged as absolutely cured of tuberculosis were careful in the post-mortem examinations, and found that there was absolutely no active pathological condition in the lungs. The healing had been complete.

RABIES

An investigation has been made to determine the prevalence of rabies in the United States, and its geographical distribution.

During the calendar year 1908, there were 111 deaths from this disease and 534 infected localities, as shown by reports of rabies among animals. The disease prevailed in 36 States and Territories and the District of Columbia in the eastern three-fourths of the United States. No cases were reported from the Rocky Mountain and Pacific Coast regions.

During the fiscal year the Pasteur treatment was administered to 130 persons at the Hygienic Laboratory. The "fixed virus" there prepared was furnished from time to time for use in the canal zone, and was sent to the health officers of several States. A bulletin on rabies, giving the results of these investigations and operations, has been published.

PELLAGRA

Pellagra, a disease which has prevailed in certain parts of Europe for more than a century, has recently been reported from various parts of the country, notably the southern States. Its apparent increase and severity and its suspected relationship to diseased corn, make it a matter of great concern and economic importance.

A year and a half ago, recognizing that this disease was to become one of national importance, a special officer was detailed for this investigation, giving his whole time to this one disease alone, and four bulletins prepared by him on the subject have been published by the bureau, and statistical information is being obtained. Within the past month, the investigation has been broadened by the appointment, with the approval of the Secretary of the Treasury, of a special commission for the investigation of pellagra, this commission consisting of seven members, five of whom are connected with the Hygienic Laboratory of the service, and two connected with the large government hospital for the insane, St. Elizabeth's, at Washington. Insanity being a frequent accompaniment of this disease, the superintendent of St. Elizabeth's was appointed on the commission, and also one of his assistants, especially noted as an expert in nerve pathology.

HOOKWORM DISEASE

Four pamphlets upon the subject of hookworm disease have been published, and an officer, who has specially investigated this disease, has been detailed to address several public health and medical associations on the subject.

Failure of requested legislation has prevented a campaign of education in conjunction with the State boards of health, which had been contemplated.

ject. In addition, he has given twenty-five popular and technical lectures on this subject in five States, and without expense to the government.

While the eradication of hookworm disease within a State is primarily the duty of its sanitary authorities, nevertheless, on account of the widespread distribution of the disease and its baneful influence on the population of the country as a whole, the Federal Government should co-operate with State authorities, and this co-operation should include especially a widespread campaign of education regarding the measures necessary to prevent the transmission of hookworm disease and treatment of the large number of persons afflicted in different sections of the country.

The gift of a million dollars by Mr. Rockefeller, and the appointment by him of a commission for the purpose of eradicating this disease is a matter of a great import. It should be remarked too, that Mr. Rockefeller's noble gift is not restricted in its use to the interest upon an endowment, but that it provides for the expenditure for five years of \$200,000 each year.

One of the members of this commission is Dr. Stiles, who has devoted himself assiduously to this subject, and who is chief of the Division of Zoölogy in the Hygienic Laboratory.

LEPROSY

In 1905 Congress appropriated \$100,000 for the erection of a leprosy investigation station on the island of Molokai in Hawaii. Great difficulty was experienced in erecting the buildings, on account of the difficulty in securing labor, caused by the fear of the disease. The investigations, however, were begun in the temporary laboratory in Honolulu. The station at Molokai, some 60 miles distant, is now completed and is about ready for occupancy.

The results obtained thus far in the investigations made at the receiving station in Honolulu are embodied in six reports, which have been published.

The investigation of incipient cases at Honolulu will continue even after the main station at Molokai is opened, as such cases present the best opportunity for the study of early methods of diagnosis and means of relief. Studies are being made of the

pathological anatomy of the nasal cavity in leprosy; treatment of incipient cases of leprosy with tuberculin, atoxyol, strychnine, chaulmoogra oil, and cinimate of soda; examination of the urine of lepers for acid-fast bacilli; and attempts to grow the lepra bacillus on several media.

On the other hand, experiments on animals and such other work as requires large amounts of leprous material can best be carried on at the station on Molokai, where the service has full control of the patients under its care. Both lines of investigation are of importance; each assists the other and together they form a comprehensive plan that should bring about results for which the investigation was begun.

The many problems that leprosy presents has for convenience been grouped into two classes:

The first class includes four important problems, namely, the growth of the lepra bacillus on artificial media; the successful inoculation of the lower animals; the discovery of a substance analogous to tuberculin, of use as a remedial or diagnostic agent; the discovery of the usual mechanism whereby the infection spreads from one person to another.

In the second class are included lesser problems that step by step add to our knowledge of the disease, and while not apparently of so great immediate importance, yet may indicate the path that leads to the solution of the greater problems mentioned.

The investigations inaugurated have for their primary object the solution of the greater problems mentioned, but it is realized that scientists in many lands have sought in vain for their solution, and years may elapse before success is attained.

If, however, efforts were thus confined, the station might continue its work for years without obtaining results worthy of publication, and the greatest utility to the sanitary and scientific world would not be subserved. Every effort will therefore be made to throw all possible light on different phases of the leprosy problem, and it is expected that results will be obtained from time to time that permit of positive opinions and announcements.

With a well equipped station and laboratory, an abundance of clinical material, and a well trained corps of scientific workers, it is reasonable to expect that interesting and useful knowledge bearing on leprosy will be obtained.

The service was represented by the director of this station at the Second International Congress Against Leprosy, held in Bergen, Norway, August 16-19, 1909, and his report has been published.

YELLOW FEVER

There has been no yellow fever in the United States, and a marked absence of this disease during the active quarantine season of 1909, in Cuban, Mexican, West Indian, Central and South American ports. This great improvement in the yellow fever situation is attributed to the greater attention being paid to sanitation.

Two years ago in the City of Mexico at the International Sanitary Convention of American Republics, Doctor Liceaga, the distinguished president of the Superior Board of Health, made the astonishing claim that they had eliminated yellow fever from the Republic of Mexico. It made somewhat of a sensation, and of course something akin to a small interrogation point arose in the minds of some of us, but we listened with respect, for we knew what they had done; and I want to say that since that date, and especially during the last summer, the results have really justified that statement. When you think that only a few years ago Vera Cruz was one of the worst infected ports on the western continent; that it was a constant menace to the United States; and that now, through the scientific and sanitary efforts of the Mexican government, inaugurated by Doctor Liceaga and backed up by President Diaz, it is free from that infection, I think you will all agree that the present status is a remarkable evidence of the intelligence and energy of our southern neighbors.

Not only did Doctor Liceaga say that he felt they had eliminated yellow fever from the Mexican Republic, but he said that the forces which they had been using to that end are now used against malaria, and that they expected to eliminate malaria from the Mexican Republic. Gentlemen, that is not only a work, an ambition and an expectation that is worthy of commendation, but it is something that should stimulate us. I believe they have given more attention to the destruction of the mosquito and the elimination of malaria and yellow fever than we have in this country, and we really can listen to them in this respect. The past year has been

one comparatively free from yellow fever in other countries as well, but it is due, I believe, to the increased attention that is being paid to sanitation all along the Spanish Main and the South and Central American Republics. Yellow fever is practically eliminated from Rio Janeiro. This is not a haphazard result, but is due to sanitary measures. Of course, we know about Cuba and the Canal Zone, and without doubt the honest and effective work in these two countries has had a marked effect by example. Then, too, the presence of medical officers of the Public Health Service, detailed in some eight or ten of the fruit ports in Central and South America, to make sure that the ships shall be free from infection before leaving, has had a sanitary influence on these republics.

Whether all who are here feel a special interest in the matter of yellow fever or not, it is a cause for congratulation that a disease which used to sweep over this country, and infected constantly all our neighbors, appears now to be practically wiped out. Of course, one swallow does not make a summer, and one or two summers of freedom from general infection is not enough to make us rest content, but still it is very encouraging, and it looks very much as though we had conquered in this western hemisphere the disease called yellow fever.

CHOLERA

Cholera being prevalent in Russia, an officer was detailed in the office of the United States Consul at Libau, which is the only port in Russia from which vessels carrying emigrants sail direct for the United States. Cholera was reported in Rotterdam August 26, 1909, and an officer on duty at Naples was sent to that port to assist the Consul in enforcing the treasury regulations. The outbreak, however, was of short duration, the disease being a recent importation from Russia, and terminated about September 11th, there having been thirteen cases and five deaths. In Manila there were 981 cases, and 23,094 cases in the provinces of the Philippine islands.

SMALLPOX

In the United States, 42 States, 1 territory and the District of Columbia reported 24,650 cases of smallpox, with 75 deaths, being 43 cases and 6 deaths less than reported for the fiscal year 1908.

During the fiscal year 1902 there were reported 55,857 cases, with 1852 deaths. Since then the number of cases and deaths has gradually diminished.

VACCINE VIRUS AND ANTITOXINS

Twenty-one establishments were licensed by the Department, ten of them being foreign, under the act approved July 1, 1902. Investigations during the year demonstrated that foot and mouth disease may be transmitted to animals through vaccine virus. An outbreak of this disease was traced to the vaccine virus of two establishments. The license of one firm, which had expired, was not renewed, and the license of the other was suspended until all infected virus had been withdrawn from the market, and the infection eradicated. The infection was due to importation from abroad, and revised regulations were therefore issued which will effectually control the importation of this product, whether intended for sale or for laboratory purposes.

HYGIENIC LABORATORY

The additions to the building, provided by Congress, and trebling its capacity, were completed during the year. Nine bulletins, containing the results of scientific investigations were issued. The total personnel of the laboratory numbers sixty.

Besides the above, the laboratory has an Advisory Board, composed of representatives of the three medical services of the government, and the Bureau of Animal Industry, and five others, representing laboratories devoted to like research. These five members are: Professor William T. Sedgwick, of the Massachusetts Institute of Technology; Professor Victor C. Vaughn, of the University of Michigan; Professor Simon Flexner, of the Rockefeller Institute for Medical Research; Professor William H. Welch, of the Johns Hopkins University, and Professor Frank Wesbrook, of the University of Minnesota. Through this Advisory Board the Hygienic Laboratory is kept in touch with investigations in other laboratories, and has advice regarding investigation being made or to be made in the government institution.

RELATIONS TO THE PHARMACOPOEIA

In 1908 the board of trustees of the United States Pharmacopoeial Convention called upon the Bureau to undertake the publication of a series of bulletins embodying digests of comments on the pharmacopoeia. This work was begun in the Division of Pharmacology of the Hygienic Laboratory, and the first digest of comments was compiled and published during the fiscal year as Bulletin No. 49 of the Hygienic Laboratory. In beginning the work, it was decided to compile the material chronologically so as to present the available comments in proper sequence. The above mentioned bulletin, therefore, deals with literature of the latter half of 1905 representing the period from the publication of the Eighth decennial revision of the pharmacopoeia to December 31, 1905.

The comments contained in this bulletin are interesting and indicative of current opinions regarding the future of this work and the development of the Division of Pharmacology. In most foreign countries the pharmacopoeia is a government publication, and its preparation is purely a governmental function. For eighty-five years the pharmacopoeia of the United States has been by contrast a wholly private enterprise, compiled, developed and published by members of a voluntary organization, and attaining a legal status only gradually through the enactment of statutes by the several states which recognized its standards.

Through recent national legislation this publication has become the federal standard, and the significance and far-reaching effects of this change of status are shown by the fact that within a year some revision of the pharmacopoeia was made necessary. The problem now to be faced by the government and by the makers of the pharmacopoeia is, what shall be the attitude of each to the other with reference to what has been termed "a sanitary institution of the first rank."

It is gratifying that the work already done by the government has been welcomed and accepted as evidence that the relation of the Federal Government to the Pharmacopoeial Convention is to be that of co-operation without domination.

The first volume of digests already published has been accepted by those interested as an expression of governmental interest in a

volume of national consequence, and that such interest is second only to the legislative action making it the official standard in this country.

A second digest of comments on the pharmacopoeia has been prepared and submitted for publication as Bulletin 58 of the Hygienic Laboratory. This second bulletin covers the literature for the calendar year ended December 31, 1906. This period was one of unusual interest and activity in matters relating to the pharmacopoeia of the United States.

The enactment of the Food and Drug Act, June 30, 1906, and the signing, November 29, 1906, of an agreement by the United States and other powers for the unification of the pharmacopoeial formulas for potent drugs make the pharmacopoeia a legal standard for the development of which in part at least, the government has incurred treaty obligations.

Since the Pharmacopoeia of the United States and the National Formulary have become legal standards, the medicaments to be incorporated require careful study and the collection of disinterested information. This is necessary inasmuch as not only powerful financial interests but the maintenance of the public health are involved. In accordance with a resolution adopted by the American Pharmaceutical Association, the second digest of comments that has been prepared relates also to the National Formulary.

Besides the compiling and publication of a series of comments there is also a great deal of important work to be done in relation to the remedies to be incorporated in the pharmacopoeia, and the chairman of the Revision Committee has advocated the carrying on of such work in a government proving laboratory. The necessary test for the identity and purity of official remedies should be elaborated by workers who are free from the stress of commercial self-interest and competition, and such work can be carried on in the Hygienic Laboratory where the methods of making official preparations of official drugs and the standardizing of such preparations when so made should also be done.

Much work has been carried on in the Division of Pharmacology in relation to therapeutic remedies. In view of the coming Pharmaceutical Convention, the Chairman of Revision, requested

Territories and the District of Columbia were represented. The discussions illustrated the value of this official organization.

The Advisory Board of the Hygienic Laboratory was convened on March 26, 1909. Investigations conducted in the laboratory were discussed, and the advice of the board obtained with regard to the continuation of the same and new investigations.

The United States Government has been represented in the International Office of Hygiene at Paris by the detail of Surgeon H. D. Geddings. Dr. Geddings is stationed now at Naples, Italy, supervising the medical inspection of emigrants leaving that port, and signing bills of health. It is so arranged that when occasion demands he can attend the meetings and represent this government at the International Office of Hygiene in Paris. The service has also maintained its interest in the International Sanitary Bureau of the American Republics in Washington, and through a resolution passed by each body, this bureau was brought into relations with the Office of Hygiene in Paris.

The Twelfth International Congress on Alcoholism was held in London, July 18 to 24, 1909. The congress was well attended, there being about 1,400 members, and practically all civilized countries being officially represented. Among the speakers were members of Parliament, prominent lawyers, including the Lord Chief Justice, officers of the English navy and army, including the Surgeon-General, railway officials, teachers, clergymen and others.

Dr. Reid Hunt, chief of the division of pharmacology, in his report of the meeting states that it seemed to be the consensus of opinion that alcohol in any form is but seldom of distinct value in the treatment of disease, also that some evidence was brought forward to show that alcohol even in moderate amounts has an unfavorable effect upon subsequent offspring and a tendency to lower resistance to infection. The dangers of alcohol to those with any tendency to nervous or mental diseases was especially emphasized as were also the effects upon children.

Statistics were presented showing that there has been a marked decrease in the use of alcohol in hospitals. The statement was also made that the only pharmacopoeias which included whisky were those of the United States and Greece and it was suggested

MEDICAL INSPECTION OF IMMIGRANTS

During the fiscal year 966,124 immigrants were inspected under the immigration laws and regulations, and 14,536 were certified for rejection on account of physical and mental defects. The inspections were conducted at fifty-eight stations in the continental United States, Canada, Porto Rico and Hawaii, but do not include the examinations in the Philippines or at foreign ports. Personal examinations were made of 965 aliens reported as public charges in various institutions throughout the United States to ascertain whether they should be deported under the immigration laws.

Service officers have also, under the supervision of the Commissioner-General of Immigration, conducted the large hospital for immigrants at Ellis Island, where 6,186 patients were admitted for treatment.

SERVICE PUBLICATIONS

During the year 246,060 copies of the various publications edited in the bureau were distributed. These include the Annual Report, the Weekly Public Health Reports, the Bulletins of the Hygienic Laboratory, and various special bulletins relating to the public health. A new edition of the Bulletin entitled "Milk and Its Relation to the Public Health" has been published.

MARINE HOSPITALS AND RELIEF

In the twenty-one marine hospitals owned by the government, and at the 126 other stations where seamen of the merchant marine receive hospital and dispensary treatment, there were treated during the fiscal year 53,074 patients, of which number 14,209 were treated in hospital, and 38,865 at the dispensaries. The new marine hospital at Buffalo, N. Y., has been completed, and is occupied.

Physical examinations, exclusive of immigrants, were made of 4,980 persons connected with the revenue cutter, life-saving, steamboat inspection, immigration and light house services, the Coast and Geodetic Survey, Civil Service Commission, Isthmian Canal Commission, and Philippine service.

Service. My subject does not call for any comment upon the public health system or organizations of the United States, nor would there be time to discuss the same, but I wish to impress one thought upon you and that is that in the division of public health work in the United States,—national, State, municipal and county,—the relative importance of the work of the county health officers and the local physicians cannot be over-estimated. You gentlemen are the ones who are familiar with the local conditions which aid in the propagation of disease, and are the first ones to become acquainted with the existence of contagious or infectious diseases. You are, therefore, the first units in the nation's sanitary organization. The large attendance at this convention, the papers read, and the interest exhibited in the discussion, all give evidence of the vitality of your association. Your State Health Commissioner, Dr. Porter, attends the annual conference of the State boards with the Public Health and Marine Hospital Service, and through him and the secretary of your State Department of Health, Mr. Seymour, we have become acquainted with your energy and excellent organization; and in closing I have to wish you the greatest success in the work of your organization and in achieving your laudable aspirations.

CHAIRMAN D. S. BURR — We receive every week a bulletin giving the contagious diseases of every sort. It is a wonderful piece of work. From the early days it has grown and taken into account all kinds of contagious diseases, and it also gives the death rates. You of the towns may not know of this, but we of the cities know what is being done by the Public Health and Marine Hospital Service under the direction of Surgeon-General Wyman. I should like to record a vote of thanks to Surgeon-General Wyman for his very interesting and instructive paper.

DR. LESEUR — I move that the convention extend a vote of thanks to Surgeon-General Wyman of the Public Health and Marine Hospital Service of the United States, for his excellent paper showing the work done by that department in the past year.

THE CHAIRMAN — You have heard the question? Is there a second?
Motion seconded.

THE CHAIRMAN — Are you ready for the question? All in favor will say Aye, contrary No; it is unanimously carried, and the congress extends its thanks to you, Surgeon-General Wyman, for your paper.

SURGEON-GENERAL WYMAN — I thank you very much for this expression of your appreciation, gentlemen.

THE CHAIRMAN — An extra paper has been introduced this morning, a paper by the Inspector of the State Commission of Lunacy. It is by Dr. Russell on Care and Commitment of Insane Persons by Health Officers.

I have the pleasure of introducing Dr. William L. Russell, Medical Inspector for the State Commission in Lunacy of the State of New York.

The local poor authorities, I am sure, attend to their duties conscientiously and to the best of their ability. They are, however, laboring under the burden of the views and methods which prevailed so long under the old system, of lack of insight into the conditions from which the cases with which they are dealing suffer, and of the economy in expenditures incidental to their principal work, which is the relief of the poor. The medical needs of the cases are consequently frequently ignored, and in emergencies the only resource thought of apparently, for men and women alike, is the constable and the lock-up.

To those who see the cases after their admission to the institutions, the extent to which police methods have been employed in dealing with them in the communities seems quite unnecessary, and often extremely injurious. This question is discussed in two special reports issued by the Commission in Lunacy, which were the results of an investigation made by a committee which was appointed at a conference of representatives of the State hospitals with the Commission. These reports show that even in the borough of Manhattan, in New York city, where the work is in most respects managed well, 55 per cent. of the cases obtain hospital care only through police channels.

In the borough of Brooklyn in the same city, on the contrary, where nurses employed by the poor authorities are sent to the home for many of the cases, the possibility of eliminating the police to a great extent is clearly demonstrated. In the rest of the State it was found that nearly 20 per cent. of the cases received at the State hospitals were found by the nurses who were sent for them, in jails, lock-ups, and other places intended only for criminals. The conditions to which some of these cases had been subjected are described in the reports referred to, and cannot be justified except on the ground that they were the inevitable outcome of an inefficient system for which no remedy had yet been found.

The cases were, in most instances, brought to the State hospitals without much difficulty by one or at most two nurses, and their behavior after admission did not indicate that the severe measures employed were unavoidable. The investigation showed also that a considerable proportion of the cases received directly from homes had been subjected to gross neglect or ill-treatment, often for

THE INVESTIGATION OF A TYPHOID EPIDEMIC

BY L. L. LUMSDEN

Passed Assistant Surgeon, U. S. Public Health and Marine Hospital Service

It was with great pleasure that I accepted an invitation to present before this Conference of Sanitary Officers of New York State a paper on the subject of "The Investigation of a Typhoid Epidemic." I am keenly appreciative of the honor bestowed upon me by such an invitation, and if I bring no new thought pertaining to the epidemiology of typhoid fever, I trust that it may be of interest to some of you to hear of the typhoid situation in Washington, D. C., and the methods followed in the investigation of it by the Typhoid Fever Board of the United States Public Health and Marine Hospital Service.

IMPORTANCE OF THE TYPHOID FEVER PROBLEM IN THE UNITED STATES

Of the problems in sanitation confronting us in America to-day, the prevention of typhoid fever stands out clearly as one of the most important. The measures required to prevent the spread of this communicable disease are known, but the practical difficulties encountered in getting these known measures carried out constitute the real problem.

The widespread and continued high rate of prevalence in our country as a whole of this thoroughly preventable disease is beginning to be justly considered a national disgrace. According to the Census Report for 1900, the average typhoid death rate for the United States was 46.5 per 100,000 inhabitants. This means that in the census year, which may be taken as an average, there were about 500 cases of typhoid fever with over forty-six deaths, among every 100,000 persons composing the American nation. The total number of deaths from typhoid fever recorded in the census year 1900 was 35,379, which gave typhoid fever fourth place on the mortality list.

The American nation justly boasts of its great wealth, its wonderful natural resources, and its leadership in adventure and invention; but when we compare our typhoid fever statistics with

2. Climate; the long periods of warm weather, when there are additional agents for the transmission of the infection, such as flies and other insects, greater quantities of uncooked foods and drinks are consumed, and there is probably greater individual susceptibility to the infection.

Considering the number of communities in the South in which polluted water supplies have been used for long periods, it is a notable fact that there have been reported in the South no pronounced and extensive epidemics of typhoid fever caused by water-borne infection. It may be that the causative organisms in the relatively warmer river and lake waters of the South do not survive in sufficient numbers to cause pronounced epidemics. In some communities in the South, as has been shown for some in the North, water may play an important part; but judging by the limited data obtainable, it seems probable that water is a relatively less important factor in the spread of the infection in the South than it is in the North.

Not many years ago typhoid fever was regarded quite generally as being almost, if not quite, wholly a water-borne disease, and the purity of the water supply of a community was estimated from the typhoid death rate. By careful epidemiologic studies of the subject it has been learned that in some communities there may be a high typhoid death rate due largely, or even entirely, to factors other than water in the spread of the infection, and sanitarians now regard the typhoid rate of a given community as a fair measure of the sanitary intelligence exercised by that community, not only in regard to the water supply, but in regard to all other factors possibly concerned in the transmission of typhoid infection.

NATURE AND SOURCE OF THE INFECTION

In recent years the generally accepted view has been that typhoid fever is an infectious disease caused by a specific micro-organism, the typhoid bacillus. The elements of mystery remaining concern the establishment of individual susceptibility to the infection, and, in some instances, the mode of transmission of the infection. We have no idea why, in some instances, fifty or more persons will be apparently equally exposed to the infection and only one or two will have the disease. We may indulge in interesting specu-

DIFFERENT TYPES OF TYPHOID FEVER SITUATIONS PRESENTED
FOR STUDY

Explosive outbreaks, such as those produced by highly infected water or milk, occurring in communities previously comparatively free from the disease, present rather characteristic features, and as a rule epidemiologic studies of these will point out quite readily and definitely the source of the infection. But in communities where a high rate of prevalence of typhoid fever is maintained for years and is due to a number of different factors which vary in relative extent of operation from time to time, the problem becomes very intricate and its exact solution exceedingly difficult. Most of the larger American cities present such complex typhoid fever situations. In the large urban community the conditions of life are complex. Large numbers of all classes of people are in close association. Foodstuffs are obtained from many sources and handled by many persons. The milk supply especially comes from many sources. In some instances the water supply is obtained from a number of different sources.

In the United States the rate of prevalence of typhoid fever is higher in the rural sections than in the cities. Other things being equal, a city surrounded by and obtaining its food supplies from a section of the country in which the typhoid rate is high will have a higher typhoid rate than a city surrounded by and obtaining its food supplies from a section of the country in which the typhoid rate is low.

The explosive and pronounced outbreaks of typhoid fever have had tremendous educative value, yet the number of cases occurring in such outbreaks composes but a small part of the whole number of cases occurring in the country every year. For the majority the infection spreads insidiously from house to house, from community to community,—hands, water, milk, various foodstuffs, flies, etc., serving as agents of transmission; the primary source of infection, however, being always the carelessly disposed of dejecta from some person.

METHOD OF INVESTIGATING A TYPHOID SITUATION

Studies of all typhoid situations should be conducted along the same general lines. Hasty conclusions, based on first glance im-

Washington, but early in July, 1906, there occurred a great increase in the number of cases, and the disease was properly regarded as prevailing in epidemic form. This marked increase in the prevalence of typhoid fever with the advent of summer weather corresponded with the history of the disease in many previous years. The recurrence of the disease at the usual rate, or even in excess of the usual rate, despite the improvement in the water supply, was a keen disappointment both to the medical profession and to the general public, as it had been expected and assurances had been given that sand filtration would greatly diminish the disease in Washington, as it had done in other cities. The health officer of the District found himself confronted with an unusual and difficult situation, and at his instance the Commissioners of the District of Columbia requested the Surgeon-General of the United States Public Health and Marine Hospital Service to cooperate with the health officer in making a study of the subject. In accordance with this request, the Surgeon-General detailed a board of officers to convene on July 2, 1906, for the purpose of making a thorough investigation of the typhoid fever situation in the District of Columbia.

We have now been engaged in the study of this problem for over three years. The results of our studies in 1906 and 1907 are published in Hygienic Laboratory Bulletins Nos. 35 and 44 respectively, and the results of our studies in 1908 are now in press and will be issued in a few days.

In conducting this investigation we have considered and studied every factor which we have thought could possibly have to do with the transmission of the infection of typhoid fever. The investigation has included a sanitary survey of the Potomac watershed; chemical and bacteriologic examinations of hundreds of samples of the city's water supply; a special study of the pumps, wells and springs in the District, and of bottled waters sold in Washington; inspection of the dairies, and laboratory examinations of the milk supply; inspections of the ice factories, and chemical and bacteriologic examinations of samples of the ice and of the water from which the ice was made; the making of cultures, widal tests, etc., to aid in the diagnosis of cases; examinations in the Division of Zoology of the Hygienic Laboratory of two hundred specimen

to avoid as much as possible the asking of leading questions; otherwise erroneous and, therefore, misleading statements may be obtained.

In this study of the cases the following blank forms have been used.

A

Typhoid case card used in 1906. All facts called for by this card were carefully investigated for each case.

United States Public Health and Marine-Hospital Service—Hygienic Laboratory

TYPHOID FEVER—CASE CARD

Name, Date of investigation, Case No.
Age, Male or female, White or colored, Married or
single, Probable date onset of disease, Date definite symp-
toms, Name and address of physician,

RESIDENCE

Residence when taken sick,; from to
Previous residences,; from to
Subsequent residence,; from to
Residence when infection was contracted, Number of occupants, ...
Servants,
 White—
 Resident,
 Nonresident,
 Colored—
 Resident,
 Nonresident,
Connected with city water system?
Connected with city sewerage system?
Privy? Location,
Privy vs. well,
Water-closets in house? Water-closets in yard?
Screens? Flies? Mosquitoes? Ants? Roaches?
Bedbugs? Rats? Mice? Other vermin?
General sanitary condition,

OCCUPATION

.....
Place,; from to
Drinking water, Sewage, Other cases, Flies, etc.,

WATER

Kind used thirty days prior to onset of illness:
 Boiled, Filtered, Bottled, kind, Soda water,
 ; where,
 Source, In or for drinking,
Ice:

FOOD

Where taken thirty days prior,
Milk, thirty days prior,; from Boiled, Pasteurized,
Ice cream,
Milk used since illness; from Bottles,
Uncooked fruits and vegetables, thirty days prior,; from
Oysters, Clams, Crabs, Lobsters, Other shell
 , Fresh-water fish (Potomac),

CONTACT

Association 30 days prior with patients in febrile stage,
 Association with suspected cases,
 Association with persons who have had typhoid within 6 months,;
 1 year,; 2 years,; 3 years,; 4 years,; 5 years,

 Association 30 days prior with persons in contact with patients in febrile
 stage,
 Treatment of stools and urine of patient,
 Other precautions,
 Remarks:
 Summary:

.....,
 (Signature of investigator)

In some instances several visits to a home are necessary before all of the data for a given case can be obtained.

As the work progresses, the case-cards are frequently reviewed, so that if any possibly responsible factor is common to a group of cases, the fact may be discovered early and the possible exposure of subsequent cases to the same factor looked out for. By this means an outbreak due to infection in milk supplied by some particular dairyman may be recognized, or at least strongly suspected, frequently at its very beginning.

The cases are charted on a street map of the city, pins, each with the number of the case attached, being stuck in to indicate the places of residence of the cases when the infection was presumably contracted. By means of this map the geographical distribution of the disease can be followed and the grouping and sometimes the relation of cases to one another discovered.

If in the course of the investigation of a case the facts suggest the possibility of some member of the household being a bacillus carrier, effort is made to obtain specimens of feces and urine from such person, for bacteriologic examination. If we find that other members of the household have had typhoid previous to the case under investigation, we usually endeavor to obtain specimens.

We have had one house outbreak apparently due to infection from a bacillus carrier. The family consisted of a mother, a son and three daughters. The son had typhoid in October, 1908. Subsequent to his attack, the three daughters developed typhoid as follows; one in December, 1908, one in January, 1909, and one in February, 1909. Specimens of feces and urine were obtained from the mother and from the son. The son's urine was found to

tion of the rate in 1907 and 1908 is accounted for by the reduction in the summer typhoid. The rates in the fall, winter and spring seasons of the three years 1906, 1907 and 1908 were almost exactly the same. An important question and one difficult to answer positively is, "How much of the reduction in the typhoid fever rate for the summers of 1907 and 1908 was due to the improvement in the water supply, as the result of sand filtration?" Had such a reduced rate been observed in the summer of 1906, the first summer after the filters were put into operation, there would probably have been few, if any, who would have doubted that the reduction in the summer typhoid had been accomplished by the improvement in the water supply. In 1906, however, the rate equaled, or even exceeded, the rates of the several years previous, despite the fact that the results of the bacteriologic analyses of the water showed that the filtration effected a very great reduction in the bacterial content of the applied water, such as was supplied the city during the three years prior to filtration. Judged by bacteriologic standards, we found the filtered water supplied the city during the typhoid seasons of 1907 and 1908 was of considerably better quality than the filtered water supplied the city in the season of 1906. The fact that the lower typhoid rate in the summers of 1907 and 1908 followed the higher degree of improvement in the filtered water seems to suggest cause and effect.

As a board, we have not been able to decide definitely as to what part water-borne infection played in the causation of typhoid fever in 1906, but we are satisfied from the results of our studies, that the Potomac river water previous to filtration caused much less of Washington's typhoid than was generally supposed, and that in the typhoid seasons of 1907 and 1908 the filtered public water supply played a relatively minor role, if any, in the causation of the disease.

Milk.—In the typhoid season (May 1 to November 1) of each of the three years 1906, 1907 and 1908, we have definitely attributed about 10 per cent. of the cases originating in the District of Columbia, to milk-borne infection. These cases occurred in the course of pronounced outbreaks among the customers of certain milk dealers. In the season of 1906, there were three such out-

effort at prevention than does typhoid fever. Considering the tremendous tax in lives and resources which the American nation pays annually to typhoid fever, the time certainly seems ripe for our health officials,—city, county, State and national,—to begin a general and concerted plan of action against this “pestilence that walketh in darkness.”

DR. H. H. CRUM — *Mr. Chairman, Ladies and Gentlemen:* I will simply add a concrete instance of the importance of milk.

On the 9th day of August of this year I discovered a case of typhoid in the home of a milk dealer named Quick. The case was removed at once to the City Hospital. The house was cleaned; the drains and closets were cleaned, and Mr. Quick did everything I asked him to do and did it under my direction.

The patient, a daughter-in-law of Mr. Quick, had been away from home—in Binghamton and other places, and I was led to believe at first that she might have contracted the disease in some of these places.

But, August 16th typhoid began to be reported and in two or three days more than a dozen cases were reported. All these cases were in one small locality, and I found that all used milk purchased from Mr. Quick. I visited Mr. Quick and got his milk route in detail and I found that less than one-half of his route was affected. I found that the first part of his route was free absolutely. On this part of his route he sold exclusively milk produced by himself. I then found that the milk sold on the part of the route infected was purchased by Mr. Quick from three farmers in Ellis Hollow, east of the city. I sent my milk inspector to investigate and he reported that one of these farmers, Mr. Middaugh, had been ill a week and that the disease had just been diagnosed as typhoid. The same day the case was reported to me as typhoid by the attending physician.

My inspector also reported that another of these farmers in Ellis Hollow, a Mr. Wilsey, had been ill a number of weeks but that he had had “sunstroke.”

Now, take notice that twelve days had not elapsed since I found the first case, Mr. Quick’s daughter-in-law.

I stopped the milk coming from Ellis Hollow. I went out and found that my inspector was correct in his findings. I also found that Mr. Wilsey, our friend with the “sunstroke” had had a little intestinal fever following his stroke; that he had had nasal hemorrhage and hemorrhage from the bowels; as Mr. Wilsey expressed it: “The doctor almost physicked me to death.”

I was now confident that our trouble was due to milk from Ellis Hollow. I might state that I found that Mr. Wilsey’s mother was Mr. Middaugh’s wife and that Mrs. Middaugh had helped care for her son, Mr. Wilsey, when he had the “sunstroke.”

Time passed; by August 31, thirty-five cases of typhoid had been reported and every one was in the same locality and had taken milk from Mr. Quick. And still no cases developed on the first part of Mr. Quick’s route. We continued to get cases of typhoid from this half milk route all through the month of September, and the total of cases due to this infection was over seventy-five.

Now you will ask: How did Mr. Quick’s daughter-in-law contract the trouble? I will tell you. He sold all of the milk of his own production first. Then he purchased the Ellis Hollow milk; finished his route; and, if he had any milk left he carried it home and used it in his own family.

A little later in October a rumor reached me that a Mr. Place, six miles outh of Ithaca, might have typhoid. As my records show that he was a roducer of milk for our market, I communicated with his physician, and on October 18 I received the following reply:

“**DEAR DOCTOR.**—Replying to yours of recent date, I would state that the patient referred to, Mr. Claude Place, has typhoid fever.

“He undoubtedly contracted it by drinking from the same cup as Royal Johnson without turning out the water left in the cup by Johnson.

"Johnson runs a threshing rig and became sick about two weeks after threshing and boarding at Glenn Wilsey's. He had an atypical, light case of the disease which was incorrectly diagnosed by four doctors, myself included. He ran his threshing rig throughout the whole course of his sickness and at the last infected his wife and daughter, who are now sick of typhoid fever. His blood gives a positive Widal reaction.

"Mr. Place's milk was promptly withdrawn from the Ithaca market and his cows have been taken over by a neighbor who works the herd and sends the milk to the Slaterville creamery.

"Assuring you of my own and Mr. Place's hearty co-operation in any reasonable sanitary measures, I remain,

"Yours fraternally,
"....."

We had the water from the Wilsey farm analyzed and Prof. Chamot of Cornell University reported colon bacilli.

Now, whether this well water gave Mr. Wilsey "sunstroke" or whether Mr. Wilsey's "sunstroke" infected the well, or whether the infected well is a coincidence, I will leave you to judge. I do know that the infection in Ithaca extended over a number of weeks. Now we have practically no cases.

I think that this picture I have given you should emphasize the importance of considering the milk supply in every typhoid epidemic, in fact, in every typhoid case.

THE CHAIRMAN — We will now proceed to the last paper of the forenoon session, that is, the paper on Vital Statistics, by Dr. Cressy L. Wilbur, Chief Statistician of the United States Census Bureau, Washington.

VITAL STATISTICS

BY CRESSY L. WILBUR, M.D.

Chief Statistician, United States Census Bureau

One of the best definitions of vital statistics that it has ever been my fortune to encounter was that contained in a little sketch entitled "The Studio Girl: A Tragedy; By One of Them," which I recently noted in the pages of the Sunday magazine of one of the great papers: "It is in the quiet blocks of houses where the ordinary persons live that neighborhood grows and folks draw together through church interests, the next-door feeling, the babies, weddings, illnesses, deaths,—those simple big happenings of life!"

Vital statistics is the study of those "simple big happenings of life," especially in their collective aspect as massed together for the city, the State, or the nation; and it is my pleasant duty to endeavor to point out to you to-day how supremely important such study is as the fundamental basis of all the public health work now in progress, or contemplated in future, under either municipal, State, or Federal agencies, or, as we are more and more coming to realize, the effective combination of municipal, *and* State, *and* Federal agencies. "Team work" is a favorite expression of my friend Surgeon-General Wyman of the United States Public Health and Marine-Hospital Service, who has just preceded me upon this platform, and the more generally effective *team work* of all agencies that make for the uplifting of the public health can be brought into play, the more rapidly will the fruits of sanitary efforts be realized in the saving of lives from preventable disease and violence, the curtailment of the wasted hours of pain and misery of the sick, and of the loss and suffering of those dependent upon them, and the building up of a happier, stronger citizenship, both of men and women, for the carrying out of the great destiny of the United States.

VITAL STATISTICS AND DEMOGRAPHY

The knowledge of vital statistics is of value not only within the nation, but also for the very important purpose of international

comparisons, by which alone the relative rank and progress of the United States can be measured as compared with the other countries of the world. It may be well to define the meaning of the word "demography," because I find that it is somewhat unfamiliar even to professed statisticians and sanitarians, and because there will meet at Washington before very long the great International Congress of Hygiene and Demography, formed by the union, many years ago, of the International Congress of Hygiene and the International Congress of Demography. The word "demography," or the French *démographie*, was originated by M. Achille Guillard, the grandfather of Dr. Jacques Bertillon, in his volume on *The Elements of Human Statistics or Comparative Demography*,¹ published at Paris in 1855. As Doctor Bertillon observes in the footnote of his work on the *Elements of Administrative Statistics*, from which the above statement is taken, the word is to-day adopted universally, except that it has received comparatively little acceptance among English-speaking nations. We have no other word, however, that fully corresponds to it, and it would be well, in view of the great International Congress soon to be with us, and in whose title it appears, that we should now naturalize it and bring it into common use. Doctor Bertillon defines it as follows: "*Demography* is the study of humanity in the collective sense. Its object is to know of what elements it is constituted, how it lives, and how it is renewed. Its principal instrument of investigation is statistics."²

The Greek origin of the word is a correct guide to its use. As geography is the study of the earth, so demography is the study of the people that inhabit it (*ἡμῶς* people). In its broadest sense, as understood by its creator, "it is the science of all numerical averages which are of interest to humanity." In the more restricted meaning with which we usually employ it, "it is the mathematical knowledge of populations, their general movements, their physical, social, intellectual, and moral conditions." Thus in a recent *Manuale di Demografia* by Napoleone Colajanni of

¹ *Eléments de statistique humaine ou Démographie comparée.*

² *La démographie est l'étude des collectivités humaines. Son objet est de savoir de quels éléments elles sont constituées, comment elles vivent et comment elles se renouvellent. Son principal instrument d'investigation est statistique.*

Naples, such subjects are considered as the census, number of inhabitants, habitations, and families, composition of the population according to anthropological character, race, language, nationality, place of origin, biological condition (sex, age), disability, social condition (civil condition, religion, education, occupation), marriage, natality, morbidity, mortality, biometry, migration (immigration, emigration, internal migration), tendency to city dwelling, etc. These are classed under the two great divisions of (1) Condition of population (static) and (2) Movement of population (dynamic). To the first, that dealing with the constitution of populations as they exist at a given time, belongs the census; to the second, which traces the growth of populations and analyzes the factors upon which such growth is dependent, belongs what English-speaking persons usually call *vital statistics*, that is, the statistics of humanity concerning those "simple big happenings of life" that come to all of us, and set their indelible impressions upon the history of the race of which we form a part.

CONDITION OF DEMOGRAPHY IN THE UNITED STATES

At a time when we are expecting the arrival of a host of European demographers, many of them trained in the methods of the most advanced civilization, it may be well to consider the present status and prospects of demographic investigation in the United States. Demography is dependent, as we have seen, upon two important factors, (1) knowledge of the *population* which is obtained by means of the census; and (2) knowledge of the *movement of the population*, which can only be obtained by the effective registration of vital statistics. As regards the census of population, the United States occupies perhaps a more advanced position than any other country in the world. It was the first nation to insure, by an organic provision of the Constitution, that regular decennial censuses of population should be obtained as a part of the fundamental law of the land. The Thirteenth Decennial Census of the United States will soon be taken, as of April 15, 1910, and from the first census of 1790 to the present, and undoubtedly for all future time while the United States remains a nation, these decennial censuses may be depended upon to supply all necessary demographic data as to the condition of the people at the time upon

which they were taken. Many States moreover, among them New York, have very complete interdecennial censuses, so that every five years, or at most every ten years, we have a thorough summing up of the people of the United States, together with statistics of agriculture, manufactures, mining, and of other subsidiary inquiries, that meet the demands for full knowledge concerning the condition of the country.

As regards the other and equally important phase of demographic study, the movement of population, the condition of the United States is far otherwise. For a large part of the United States, including practically the entire South except for a few registration cities, we have no vital statistics at all of a reliable character. In no southern State at the present moment is there complete, successful, State-wide registration of even deaths alone. Possibly in not a single State of the Union at the present time — certainly not a few years ago — is there complete, successful, State-wide registration of births; not even so complete that we could be assured that at least nine births are registered out of every ten that actually occurred. You will note that I do not speak definitely as to the actual condition at present with respect to the registration of births. This is for the reason that a special collection was made by the Bureau of the Census of all the births registered in the United States for 1908, and until the compilation has been completed and the data analyzed, I would prefer to speak only in general terms. But it is certain that there are very few places in the United States where *all* births are registered, or even where births are registered with an approach to a fair degree of completeness so that it is worth while regularly to collect them from the State or city registration offices, in accordance with the Act of Congress relating thereto, as the beginning of a registration area for births of the United States. The term "registration area," as used in all the vital statistics reports of the Federal Government since 1880, relates simply to the registration of deaths; which fact is a sufficient commentary upon the present condition of vital statistics in the United States at the end of the first decade of the twentieth century. In no other civilized country in the world is there such gross and utter neglect of the registration of vital statistics, a function which is considered an indispensable part of the duty of a modern progressive nation.

LOSS TO THE CITIZEN AND TO SANITATION FROM NEGLECT OF
VITAL STATISTICS

Important as the proper registration of vital statistics in the United States may be for demographic purposes — and it is not pleasant to have other countries in a position to point to the national neglect of this subject as evidence of the crude and semi-civilized condition of civil administration in the United States — I should not urge upon you solely, or chiefly, the necessity of more adequate registration of births and deaths from this point of view alone. Indeed, I may assume, in this assemblage of health officers of the Empire State of the Union, whose population as determined next year will probably nearly if not quite equal the entire population of England and Wales at the beginning of the last century,¹ and which sustained the terrific struggle of the Napoleonic wars, that neither the disposition nor the *means* are wanting to secure complete registration of every birth and death that occurs in the State. Surely no argument can be needed as to the necessity of recording every death as it occurs, upon a standard certificate of death, and with the absolute requirement of a burial or removal permit to be issued by the local registrar *before* any disposition is made of the body. For nearly thirty years, since the first organization of the State Board of Health of New York, of which the present Health Department is the direct continuation, the importance of correct vital statistics has been iterated and reiterated to the people of the State. From the first annual report, transmitted to Governor Cornell, December 1, 1880, I may quote:

Registration of Deaths, Births and Marriages.— *The Bureau of Vital Statistics.*— The records of the sanitary condition of five millions of people and of the movements of this population, the registry of their mortality and the causes of death, the registry of prevalent diseases and a faithful [mark the *faithful*] record of all [*all*] births and marriages, pertain to the Bureau of Vital Statistics. The necessities of sanitary service, and the interests of communities considered socially and physiologically, alike require that this registration in all its parts be complete, uniform in its

* Estimated population of New York, 1910, according to the method of average annual increase, 8,865,722; of England and Wales, by census of March 10, 1801, 8,892,536.

methods, and faithfully attended to in all its details. With the registration of mortality and its various causes, and with the records of prevalent diseases, sanitary officers have constant occasion to concern themselves; but the other two branches of vital registration are also essentially necessary in the study and establishment of the sanitary defenses of the people.

The registration should be *complete*; and the registration of births and marriages is also *essentially necessary*, as well as that of deaths, to the *sanitary defenses of the people*. To-day, nearly thirty years after these words were written, even the registration of deaths is probably not thoroughly complete in all parts of the State. The comparison made by the twelfth census for 1900 showed that for the counties of New York investigated the ratio of deaths registered under the State law was only 90.6 per cent. of those that actually occurred, as determined by the addition of enumerators' returns, thus falling decidedly below the completeness of registration in Michigan, as determined by the same test, 92.9 per cent. for which State the law had only been in operation about two years and had not then been extended, so far as the requirement of compulsory burial permits is concerned, over the entire State. A marriage license law — the only way in which accurate records of marriages can be obtained — has only lately been enacted in New York. For births reference need only be made to the recent Monthly Bulletins of the New York State Department of Health, so ably edited by Dr. Hills Cole, and which are of course carefully read by you each month, to appreciate how worthless the registration of births remains to-day in many parts of the State. I need not point out to you the exact localities where the enforcement of the birth registration law is totally neglected; the figures show for themselves and attention has been called to them time and time again in the Bulletin and in the annual reports. Some places show, as in the table of city birth rates and death rates for 1908, presented in the Bulletin for February, 1909, a large excess of deaths over births, and pointing to a rapid natural decrease of the population — if the statistics are correct. Probably in most instances, such rates are merely indicative of the gross neglect of effective registration of births. It is difficult to understand the apathy of communities to such continued misrep-

in the State of New York, and of course a far higher proportion of adults, especially in the Lower Peninsula. My maternal grandfather, Dr. Alonzo Cressy, practised medicine for a time in conjunction with his father-in-law, Dr. Justin Smith, at Lima, before he went to Michigan Territory in the 30's. I have some of his old books of account yet, with shilling charges, when a dollar was bigger than an eagle to-day. My paternal grandfather, Jephtha Wilbur, one of the pioneer settlers of the Genesee valley, lived on the old homestead, "down by the willows," just over the Monroe county line, in Livingston county. As a boy on the farm Rochester was "The City" to me — the first city that I ever knew. Later, but over thirty-five years ago, I have memories of school days in old "No. 11"; I have yet the certificate of promotion there received. So I was proud when Michigan was acknowledged by the Federal Census — long before my connection with it — as the first registration State west of New York; and the methods that were employed for the registration of vital statistics in Michigan were largely based upon the methods employed in this State.

One of the greatest vital statisticians and practical sanitarians, in my judgment, who ever labored in the United States was Dr. Elisha Harris, the first Secretary of the New York State Board of Health. Coming to the State work after eminent service as Secretary of the Metropolitan Board of Health of New York City, where he had given special attention to the registration of vital statistics, he early adopted methods which were really the fountain source of the laws of many other States, and which are incorporated in the standard bills of the present day as recommended by the Bureau of the Census and approved by the American Medical Association and by the American Public Health Association. It was never my fortune to know Dr. Harris personally, although his face is familiar as one of the early presidents of the American Public Health Association from an engraving that formerly hung on the walls of the Michigan State Board of Health. But his influence is vital and active to-day, and his ideas are being carried out from the Atlantic to the Pacific in many laws passed during the last ten years. I mention this to show how lasting is the influence of thorough work, and how appropriate it would be for the health officers of the State to resolve to thoroughly carry out to-

to prove the important facts contained therein — facts which may frequently be insusceptible of any other proof. The claims of descent, proofs necessary for the inheritance of property, especially from foreign countries, the establishment of school age, age for lawful employment of children, age of consent, voting age, and many other requirements, can be drawn only from accurate birth records made at the time of birth or immediately thereafter. Early notification of births is essential for the prevention of certain diseases, and the total number of births in a State or city is the basis of that most important ratio known as *infant mortality*. The full measure of protection to infant life cannot be extended unless all births are promptly registered, and all the vital statistics of the State are vitiated by the neglect or failure of physicians and midwives to obey reasonable laws for this purpose. Are they to receive general immunity for such negligence, and is it the will of the people of the State that the wise safeguards intended to be thrown around the most helpless and dependent class of the community should be set at naught as if by a specially privileged class who assume to obey or disobey them as a mere matter of personal convenience? The question is one of rapidly increasing importance, as our civilization grows in complexity. Watch the crowds at the office of the Registrar of Records of Greater New York at the Health Department on Sixth avenue, and note the trouble and disappointment, perhaps even the serious loss, that follows when it appears that some careless doctor or midwife in years gone by has neglected his or her duty. The State owes it to the children born that they shall be duly registered under the wise provisions of the State law, and the State owes it to its own self-respect that the law shall be enforced without fear or favor in each and every part of the State. It is a State law; that should be sufficient.

Why are such laws not thoroughly enforced? The answer is simple: Ignorance or incompetency of the local registrar, or fear or favoritism on his part for known violators of the law. The latter reasons are sometimes summarized by the single word *tact*; when a registrar desires a tactful administration, with avoidance of all friction, he can secure it by ignoring violations of the law. Observe that I do not assign any special measure of blame to physicians or midwives for forgetting, refusing, or neglecting to

were registered for 1908, over 3,000 delinquent returns being made for Philadelphia alone. The work is continuing, territory being revisited from time to time to insure that there is no slackening in the enforcement of law. I have been about with one of the State inspectors myself, at Scranton and Wilkes-Barre, and I can assure you that aside from insuring the enforcement of the law, the work is very important as educating the physicians, the midwives, and the people and press generally as to the necessity for proper registration, and that the law is not a mere form to be obeyed or violated with impunity, but a measure for the protection of the legal, personal, and sanitary rights of the children *that must be obeyed*.

Why should not the same measures be carried out in New York? Why should not the law be enforced throughout the State? Are there any reasons why certain cities should not register their births when the State law requires that they should? In selecting the list of eligible States for the registration area of births, which may be constituted by the Bureau of the Census next year, it is certainly disheartening to contemplate the apparent neglect of complete registration of births now existing in certain parts of New York. A few negligent local registrars cast a reflection upon the entire State service, just as a few doctors or midwives in a community who do not choose to obey the law, and are not forced to do so, soon lead to its general neglect. It seems to me that the organized public health officials of the State and the organized medical profession of the State should *demand* that these laws be thoroughly enforced, and should support the conscientious registration official in the thorough discharge of his duty in requiring the prompt and complete registration of all births and deaths that occur in his jurisdiction.

The outlook was never so hopeful as at the present time for greatly improved vital statistics for the United States. We shall start out next year, at the beginning of a new census decade, with a strong organization of the registration officials of the United States, who have constituted since 1907 the Section on Vital Statistics of the American Public Health Association, of which Dr. William H. Guilfooy, Registrar of Records of Greater New York, is now the chairman. This section has already proved of great service in elaborating rules of statistical practice, which may be found each year in the annual reports on mortality statistics published by t

Bureau of the Census, and which will do much to harmonize and render comparable the methods of compilation and presentation of data in the various State and city reports. At Richmond last month the revised United States standard certificate of death was adopted for general use throughout the United States and has been approved by the Bureau of Census. It will be at once accepted by Doctor Porter for use in New York—in fact, the New York State Department of Health was the first State office that promised immediate adoption. New York is now as prompt as it was in 1901, when its action determined the success of the original standard certificate, of which this is the first revision. As chairman of the committee on vital statistics of the American Public Health Association I was appealed to by the Illinois State Board of Health, which had just secured the passage of a registration law, to draft a form of certificate of death for their use. We had then a very excellent form in Michigan, but it seemed to me that by getting two or three States to agree upon a uniform blank, we might secure the adoption of a standard certificate throughout the United States, and so have a uniform basis for national mortality statistics. Doctor Hurty of Indiana and I therefore agreed that we would use the new blank that we were preparing for Illinois for both Indiana and Michigan, beginning January 1, 1902. Happening about that time to be summoned to Washington for consultation by my predecessor, Mr. William A. King, I took the new blank with me and called on the way upon Dr. Daniel Lewis, then State Health Commissioner, at his office on Madison avenue, New York. Doctor Lewis heartily approved the new form, and when I reached Washington with four States, as we supposed, Illinois, Indiana, Michigan, and New York, a unit for the standard blank, Mr. King at once adopted it for the Bureau of the Census and it has been in very satisfactory use in all of the newer registration States since that date. The chief advantages of the revised blank are a better statement of occupation and cause of death, and the provision for certain definite instructions in regard to their statement, so that the returns of deaths will be more precise.

Another promising line of effort just begun is the co-operation of the American Public Health Association and the American Statistical Association with the Bureau of the Census in the

preparation of uniform forms of tables to be used in city, State, and Federal reports upon vital statistics, so that the reader will be sure to find the most essential data presented in comparable form. The Actuarial Society of America has also appointed a strong committee to co-operate in the preparation of life tables based upon the mortality returns for recent years, so that it is of the utmost importance that the registration should be absolutely complete. Again, the efforts of American registration officials have resulted in the success of the movement for a uniform classification of causes of death, and at the Second Decennial Revision of the International Classification of Diseases and Causes of Death, which was convened at Paris last July by the French Government, the registration officials and medical profession of the United States were specially represented in the Census Commission authorized by the first act passed by the present Congress. The number of registration States (for deaths) has grown from nine in 1900 to eighteen in 1909, including the great State of Ohio recently admitted, and the proportion of the population contained in the registration area now exceeds 55 per cent. of the total population of continental United States. Good laws have been passed in other States, among them Delaware, Missouri, and North Carolina during the present year, and there is active interest in obtaining and enforcing good legislation for vital statistics. All this is for deaths, however, and we must look to our old registration States to show that they can bring up the standard of birth registration so that they can be accepted in the first registration area for births constituted by the Census. It would be a shame indeed if States with comparatively recent laws should surpass them, and be entitled to admission while they remain in the old rut of slack and negligent enforcement of law. I cannot believe that the Empire State will not rise to the occasion, and that every local registrar, every health officer, and every citizen of the State will not co-operate with and earnestly support the State Health Department in the thorough enforcement throughout the State of those registration laws upon which the success of its sanitary work is so absolutely dependent.

THE CHAIRMAN — We will now have discussion on this paper by Dr. Albert Mott, of Cohoes, N. Y.

DR. ALBERT MOTT — As is well known, the division of vital statistics

the State Department of Health has to deal with returns of the local registrar of vital statistics from the municipalities of the State. The necessity of uniformity and accuracy in the returns has been thoroughly elucidated in the paper just read. We know that the credit of the State service must suffer from heedless and incomplete work and in order to secure proper returns the registrar must understand that the same principle that governs successful business corporations must be adhered to in this work. Every detail must be known, and promptness in the execution of the same will be the only means of obtaining satisfactory results.

Concentration of effort is imperative in order to attain the highest degree of success in any undertaking, and in nothing does the principle apply more directly than in the matter of vital statistics. However, centralization of authority is as necessary as concentration of effort in any business. This work is of fundamental importance for the maintenance of public health, and in order for the health officer to do the most effective work we believe there should be no division of authority, but that he only should be responsible for the proper registration of vital statistics in every municipality.

We know that the health officer would often have to deal with busy and inattentive communities, but he should present the essentials of correct registration not only to the laity but to the medical profession of his jurisdiction and as far as possible secure the co-operation of all classes. Chapter 351, Public Health Law, section 1, says in part: "It shall be the duty of every physician in the State of New York to report in writing, on a form to be furnished as hereinafter provided, the name, age, sex, color, occupation, place where last employed, if known, and address, of every person known by said physician to have tuberculosis, to the health officer of the city, town or village in which said person resides, within twenty-four hours after such fact comes to the knowledge of said physician." Section 3 says in part: "It shall be the duty of every health officer of a city, town or village to cause all reports made in accordance with the provisions of the first section of this act, and also all results of examinations, showing the presence of the bacilli of tuberculosis, made in accordance with the provisions of second section of this act, to be recorded in a register, of which he shall be the custodian." Chapter 396, section 24 of Article 2 says in part: "Every physician shall immediately give notice of every case of infectious and contagious or communicable disease required by the State department of health to be reported to it, to the health officer of the city, town or village where such disease occurs." I have referred to the above items in the Public Health Law to call your attention to the fact that the health officer is made, by these provisions, the registrar of vital statistics for conditions attending the perpetuation of life, excepting births and deaths. The Public Health Law should also require the health officer to have a record of every birth and every death, as prescribed by the State Department of Health. I believe the above are wise provisions, as it gives the health officer proper police power. In order that the health officer may succeed in reaching the largest degree of success in the betterment of the public health, he might have a police power which cares for the health, for the life and for the safety of the community. The Public Health Law provides that the sum of twenty-five cents shall be paid to the physician or person for each case of infections and contagious or communicable disease reported, and the sum of twenty-five cents for each certificate of birth and for each certificate of death. The provision of a specific amount for such service is a wise one, and will aid materially in securing a complete registration of all cases desired by the department.

As a matter of justice I believe the Public Health Law should be amended so as to provide for the payment of the sum of twenty-five cents for the registration of each birth and death, and for every case of infectious and contagious or communicable disease, and for the granting of each permit for the burial or transportation of the dead, and these provisions should apply to the towns, villages, and cities of the third class in the State. If these suggestions should be adopted in the future and the health officer will co-operate cordially in this matter I am sure we will have a registration of vital statistics in this State that would be superior in quality and completeness.

THE CHAIRMAN — We will now adjourn until 2 o'clock.

FRIDAY, NOVEMBER 12

SIXTH SESSION, 2.30 P. M.

THE CHAIRMAN — The first paper of the afternoon is "Benzoate of Soda in Food," by Dr. Daniel R. Lucas, of New York City.

BENZOATE OF SODA IN FOOD

BY DANIEL R. LUCAS, M.D.

New York City

We can never calculate the causes of disease with mathematical precision.

Fundamental in the study of disease is knowledge of normal structure and function. Here our difficulties are great, for in many organs the structure is exceedingly complex and the function obscure. Regarding the kidney, for example, Sollmann states "in isolating its functions recourse must be had to indirect methods, to deductions and theories, which, in turn, rest on assumptions more or less definitely proven, or more or less probable." Indeed our assumptions are often in inverse proportion to the extent of our knowledge.

Again we always have to bear in mind the condition of the individual and his peculiarities; etiological factors act upon him in various ways. Some persons can swallow without any evil results a quantity of microbes which in the case of other individuals would produce a fatal attack of cholera.

Metchnikoff states "the bodies of men and of higher animals are possessed of a complex mechanism which resists the harmful action of bacteria and their poisons. The various parts of this mechanism may act differently, with the result that there is a great variation in the power of resistance. Thus a multitude of microbes may be in the intestine. They bring little harm to an organism that has a high power of destruction or neutralization of their toxins, or when these harmful products are unable to pass through the intestinal wall. It is in this way that I explain some

TABLE 1

Comparative arresting action on ferments in aqueous solution

	Emulsin	Myro- sin	Dias- tase	Inver- tin	Ptya- lin	Pepsin	Pancre- atin	Ren- net
Benzoic acid	2100	1100	1025	400	2600	200	2600	300
Sodium benzoate . . .	100	20	100	65	86	—	—	50

*Comparative retarding influence on the development of
Anthrax Bacteria*

	Lacroix prevents	Brunton hinders	Brunton kills
Benzoic acid	2800	2000	400
Sodium benzoate	—	200	—

From this table it is seen that the inhibiting action of a given amount of benzoic acid in combined form, e. g., sodium benzoate, is very much weaker than when the benzoic is free. Ordinary commercial sodium benzoate contains about 75 per cent. of the radical of benzoic acid, but whereas one part of benzoic acid in 2,100 parts of water arrests the action of emulsin, 21 parts of sodium benzoate must be present in a like volume to produce the same effect. A similar subordinate relation to benzoic acid is shown by sodium benzoate when comparative toxicity on other enzymes and bacteria is considered.

Fleck found that benzoic acid, in concentrations equal to 0.6–0.7 per cent. caused marked inhibition of yeast fermentation and that the arresting action was materially diminished by an increase in the amount of associated protein.

Lehmann states on the basis of his own experiments that in the presence of relatively large quantities of albumin, or where the reaction is alkaline, neutral or weakly acid, sodium benzoate is not a good preservative. Lehmann observed also that meat extract putrefied in the presence of 1 per cent. to 2 per cent. of sodium benzoate, but a smaller proportion of benzoic acid, acted more strongly antiputrefactive when the reaction of the extract was markedly acid. He also found that the action of sodium benzoate under strongly acid conditions is practically the same as that of an equivalent amount of benzoic acid, but diminishes with decrease of the associated acidity.

lemons and carrots were used, with the following results: Unpreserved pulp from each of the indicated sources spoiled in from 24 to 48 hours, as was shown by discoloration and the presence of mould colonies.

In the preserved specimens (sodium benzoate 1 per cent.) clear, shining, crystals of benzoic acid separated on the surface of the juices with the strongest acid reactions and in the substance, as well as on the surface, of the pulp specimens. No mould or discoloration occurred in the preserved specimens at the end of twenty days.¹

B Influence on the fermentation of milk.

The observations on fifty samples of milk warrant the following general conclusions:

1 Sodium benzoate (1 per cent.) does not greatly retard the development of the lactic acid ferment.¹

2 Small amounts of sodium benzoate and sodium carbonate both retard the thickening of milk, but similar quantities of sodium carbonate do not prevent its fermentation. Sodium benzoate is distinctly alkaline in reaction. It is probable that it is this alkalinity which increases the fluidity of milk and delays the souring and thickening.

C The action of free benzoic acid on fresh milk.

When fresh milk contains 1 per cent. of added benzoic acid, the thickening of the specimens is delayed very little, if at all. It was observed that, in a very short time after such proportions of benzoic acid were mixed with milk, all taste of benzoic acid disappeared, the specimens assuming a modified benzoate taste, which persisted until a few hours before thickening occurred, when the benzoic acid taste again became evident. It seems obvious that some constituent or constituents of the milk are capable of combining with free benzoic acid and thus preventing the irritating action of benzoic acid on the mucous membranes of the alimentary tract, as well as modifying its taste, when swallowed in sweet milk. The proteins, as well as the alkaline phosphates, may have this property. An inquiry into this matter was made in the following experiment:

Into each of twelve test tubes, 10 c.c of sweet milk were poured

¹ Complete data may be obtained from the author.

and 0.01 gm. of sodium benzoate (0.1 per cent. was then added to each of ten of these portions of milk). (In all previous tests this proportion of sodium benzoate prevented thickening at room temperature for seventeen days.) Decreasing amounts of benzoic acid were then added to seven of these mixtures.

The time of precipitation and thickening indicated that sodium benzoate tends to delay coagulation. The data also show that benzoic acid tends to counteract the retardation of coagulation in proportion to the amount added, and even to hasten the thickening of milk when added in large amounts.¹

From these and the previously mentioned results it may be concluded that one or more constituents of milk have the power of combining with relatively large amounts of benzoic acid, detoxifying it so as to render it comparatively non-inhibiting to the lactic acid ferment and non-irritating to mucous membranes, until the fermentation acidity is developed to a strength sufficient to enforce the presence of free benzoic acid.

2 *Effects on men*

A Influence when administered in acid fruit, juices, vegetables and milk.

Samples of milk and of tomato (hot and cold), orange, lemon, apple, plum and carrot, containing 1 per cent. of sodium benzoate, were tasted by fourteen different persons. Each subject noted a distinctly astringent, irritating taste. In one subject, suffering from coryza, there was an increase of the nasal secretion, accompanied by lacrymation and coughing. There was belching and passage of gas by rectum. In one subject who had been suffering from a gastro-intestinal derangement for several days, the latter effects were especially marked. The sodium benzoate also caused slight nausea accompanied by abdominal uneasiness, for four hours. (This subject, a man of scientific training and experience, pronounced the material — orange juice plus 1 per cent. sodium benzoate) “vicious stuff.” It was noted throughout these tests that the irritating effect varied with the degree of acidity of the vegetable product.

¹ Complete data may be obtained from the author.

The observed effects on taste may be summarized as follows:

Acid fruit juices containing 1 per cent. of sodium benzoate have a biting taste, an effect due to liberated benzoic acid. Milk or vegetable alkaline rendered and treated with sodium benzoate (1 per cent.) did not taste of benzoic acid at any time during the first twenty-four hours after the treatment, but when acid fermentation began in spite of the presence of 1 per cent. of sodium benzoate, the mixtures tasted of benzoic acid. In samples of carrot pulp the stinging taste of benzoic acid was not so evident as with the more highly acid materials. Small volumes of orange juice to which 1 per cent. of sodium benzoate had been added, usually caused burning in the posterior part of the mouth, the throat, the esophagus and stomach.

Apple juice to which a small amount of sodium benzoate is added becomes sweeter but astringent and stinging to the taste, and irritating to the mucous membrane. The presence of 0.5 per cent. of sodium benzoate renders apple juice quite unpalatable, but the presence of 0.1 per cent. may be over looked by subjects not acquainted with the taste of pure apple juice.

After repeatedly ingesting small amounts of fruit pulps treated with sodium benzoate (1 per cent.) two subjects experienced fullness of the head, headache, and a feeling of fatigue and depression. These samples were taken into empty stomachs. The results show that benzoic acid, liberated from sodium benzoate by acid fruits and vegetables, is sufficiently irritating to cause gastro-intestinal disturbances, as well as general systemic symptoms.

These preliminary observations were followed by an investigation to determine some of the possible effects of food products preserved with sodium benzoate as allowed by law, and as customarily consumed, e. g., apple juice containing sodium benzoate and taken principally between meals. ("It having been determined that benzoate of soda mixed with food is not deleterious or poisonous and is not injurious to health, no objection will be raised under the Food and Drugs Act to the use in food of benzoate of soda." Food Inspection Decision 104, U. S. Dept. of Agriculture, March 3, 1909.)

Applejuice was used in this part of the study. The quantity of apple juice generally administered was a volume equal to the

average quantity of pure apple juice consumed under normal conditions by the subjects. This "normal" amount was determined by placing freely at the disposal of the subjects five gallons of unpreserved, untreated Baldwin apple juice from cold storage at 32°F, "pressed" and stored one month previous to its use, and which was in a state of perfect preservation. Assistants in this laboratory and various attaches of the college, twenty in number, drank freely of the juice. It was requested of them that a careful record be returned of the amount each consumed. Question blanks regarding symptoms and effects were filled in and returned by the subjects. The average amount of cider consumed by these subjects, men who were busy with their regular work, was 1,200.c.c. Amounts up to 1,500 c.c. were taken rapidly as a rule, while those who drank as much as 2,500.c.c. usually consumed the total volume in two main portions at intervals of two or three hours.

B The effects of pure apple juice.

Pure apple juice is a bland, acid liquid. It does not produce a stinging sensation in the throat when swallowed. The pure juice used in these experiments had not been processed in any way and was very rich in pulp. It had a total free acidity of 2.916 gms. per liter (calculated as acetic, or 3.254 as malic acid). Of this pure juice 100 c.c. yielded to ether 0.002gm. of sticky extractive. Of an aqueous 0.1 per cent. solution of sodium benzoate, 100 c.c. yielded to ether 0.0007 gm. of oily extractive, but 100 c.c. of apple juice containing 0.1 per cent. of sodium benzoate, yielded to ether 0.0827 gm. of extractive. The extractive was a white crystalline product. Amounts of benzoic acid (0.0874 gm. equivalent to those in 100 c.c. of cider containing 0.1 per cent. of sodium benzoate, but dissolved in 100 c.c. of water and neutralized with NaHCO_3), yielded to ether 0.003 gm. of sticky extractive material.

I was unable to find unpreserved apple juice in this city, the dealers in cider in New York informing me that for six months or more they had not had on hand any cider that was not preserved with chemicals such as sodium benzoate or salicylic acid, or both.

The pure apple juice, when consumed in volumes larger than 500 c.c., promptly caused considerable diuresis. The specific grav-

ity of the urine was greatly decreased when a liter of pure apple juice was consumed. Volumes larger than 1,000 c.c. gave in some cases laxative effects. Several subjects who drank 2,000 c.c. experienced no laxative effects.

The results observed were constant diuretic and occasional laxative effects, immediate feeling of fullness, and the accompanying contentment. The average amount of pure apple juice consumed during three hours by adult males who had free access to it was 1,370 c.c. The consumption of 1,000 to 2,000 c.c. of pure apple juice caused neither headache, nausea, albuminuria, subnormal temperature nor vomiting in any instance.

C The effects of benzoated apple juice.

a First experiment.

Twenty-four subjects were observed in the first experiment. Twelve received pure apple juice; twelve received samples of the same apple juice containing 0.1 per cent. of added sodium benzoate. As none of the subjects knew that they were to receive at this time anything but pure apple juice, unfavorable psychological influences were eliminated from the experiments. Each subject received three question blanks to be filled out by himself daily, so long as any symptoms might last.

The twelve men who took the apple juice containing 0.1 per cent. of sodium benzoate noted on their question blanks collectively the following symptoms: stringent peppery taste, fullness of head, frontal headache, nervousness, belching, griping, passing of gas by rectum, unusual perspiration, nausea, dry mouth, itching of skin and scalp, pain in the stomach, vomiting. There was also irregularity of the bowels (constipation frequently), decreased flow of urine, increased specific gravity of the urine and albuminuria. The average volume of benzoated cider taken in two experiments was 1,090 c.c. and the corresponding amount of ingested sodium benzoate (benzoic acid) was 1.09 gm. Excessive amounts of hippuric acid were eliminated, especially during the first few hours after ingestion of the benzoated apple juice coincident with the tendency to decreased volume of urine secreted.

From careful analysis of all the data it is apparent that small

proportions of benzoic acid in cider caused unusual variation of blood pressure, temperature and pulse, decrease in the normal volume of urine secreted in the first three hours after ingestion, and corresponding increase in the specific gravity, in spite of the ingestion of the great volume of fluid. Albumin appeared in the urine in a number of cases. The urine also caused marked reduction of Fehling solution in a number of cases.

If the apple pulp, protein, etc., is filtered from cider, the effects of the added benzoate on the upper alimentary tract become much more decided.

I was able, however, to ingest 1,000 c.c. of such apple juice containing 0.5 per cent. of sodium benzoate without any albuminuria arising. The amount of hippuric acid in my urine for the first few hours thereafter was excessive. The secretion of urine was very much reduced for twelve hours, while I suffered from some of the other symptoms above mentioned, *although as a subject in a former investigation I ingested, without the slightest discomfort, larger amounts taken in milk and on a full stomach.*

I previously reported, at meetings of two different scientific organizations, the results of experimental work in this relation in which over forty different human subjects were observed and a number of animal experiments performed.¹ The data obtained is so voluminous that it is impossible to give here any of it *in extenso*.

I wish, however, to submit for your criticism the somewhat detailed account of the experiments on one of the subjects in the above mentioned investigation.

This subject, a medical student, good habits, twenty-three years of age, weighed 120 lbs. While not a robust individual, was considered in good health at the time of the investigation. About one year previous to the investigation he had not felt well and was examined by Dr. S. J. Meltzer, who informed him that there were no evidences of heart, lung, or kidney trouble. Several months subsequent to this time he was again examined by another physi-

¹ Jour. A. M. A. vol. liv, No. 10, p. 759, Mar. 1910.

cian in private practice, who also made negative reports of the physical and analytical findings. During the ten days previous to the taking of benzoate, his urine was examined at four different times, on each occasion for albumen, with negative results. During the month previous to the beginning of this investigation, his urine was examined at numerous intervals by three different persons, in connection with some other studies, at all of which albumin was tested for and not found.

Between March 5 and 17, 1909, the subject tasted small amounts of various acid foodstuffs such as orange and lemon pulp, and apple juice containing 1 per cent. of added sodium benzoate. He also tasted pure sodium benzoate in the form of the dry crystals, and in solution, pure benzoic acid under the same conditions, also milk containing each of these substances, etc. The amount of drug taken did not exceed $1/10$ of a gram at a dose, the maximum amount per day did not exceed $1/2$ gram, up to March 18th. The tests were made between 10 and 12 a. m. or 4 and 5 p. m. therefore presumably on an empty stomach; they were made for the purpose of determining the difference in the taste of benzoate and benzoic acid when taken in the various above mentioned ways. The subject did not feel well on the 15th and 16th complaining of headache and fatigue, and albumen was found in his urine on the morning of the 17th. No benzoate was given on that day, but at 12 o'clock at noon the subject was given 1,000 c.c. of absolutely pure and unfermented Baldwin apple juice, which he drank with relish, and rather rapidly.

It was found that the trace of albumen in his urine of the 17th was decidedly less after drinking the cider and until the next test on the following day.

The following are his notes made at the time of experiment on March 18, 1909 and thereafter.

"Took 500 c.c. (apple juice) at 11:45 o'clock, drank it fairly rapidly, then at 12 o'clock took 500 c.c. to which had been added one gram of sodium benzoate. Had a mean, burning taste. Drank last portion slowly. At 12:15 had a heavy and uneasy feeling in the region of my epigastrium. Ate very little lunch. At 12:35

had a heavy movement of the bowels which was acid in character and watery in consistency. At 1:15 had a watery movement which was acid in character. Had a congested and uneasy feeling in head and sweat quite a bit. The feeling of heat and uneasiness disappeared about 3 o'clock and I felt first class after that. ("Another movement, the feces were amphoteric"). A slight trace of albumen was present in the urine of the 18th (probably but little of the benzoate was absorbed).

Friday, March 19th. Took 500 c.c. of cider at 11 o'clock, followed with 500 c.c. of cider containing 5 gm. of sodium benzoate. Had a mean burning sensation. At 11:45 was very nauseated, belched a good deal and felt queer in the head. At 12 o'clock felt flushed and uneasy, sweated, nausea still present but better, pulse was 105, temperature 97°F. At 12:30, feeling much better; 1:50, belching and griping; 2:00, had a little to eat but not much of an appetite; 2:10 had a little movement of bowels (movement was very hard); 3:00 felt miserable, pain in my abdomen, peculiar feeling in my head and general uneasy sensation. Went home, 3:30 to 4:30, slept a little but on getting up felt restless and extremely nervous. Tried to move my bowels but could not. Temperature 98°F, pulse 92 and irregular; 5:30, feeling more easy but still queer in epigastric region and head; 7 o'clock feeling fairly good, a little bit flushed and have belched a good deal, also tympanites; 8 o'clock feeling fairly good but slightly uneasy. Retired at 10 o'clock. (There was a very heavy precipitate of albumen present in the urine of this day.)

March 20th. Had a very poor night of it, being restless and uneasy. At 9 a. m. temperature 96.8°F, pulse 92. Felt exceedingly weak all morning and quit work at 12 o'clock, urine contains a good deal of phosphates and albumen. Took a nap and felt decidedly better. 2:30, pulse 82, temperature 97°F.

The quantity of albumen in his urine was 1/2 gram per 100 c.c. (The precipitate obtained in the heat and acetic acid test was filtered out and added to 95 per cent. alcohol and was found to be insoluble, thereby ruling out the possibility that the precipitate might be resinous material.)

On account of the very bad condition of the subject on March 20th the dosage was not repeated; however, the amount of albumen in the twenty-four hour specimen equalled $\frac{1}{2}$ gram per 100 c.c. The large amount of phosphates in the urine subsequent to the dose of benzoate was striking. No dose was given for the following six days, the albumen gradually disappearing from the urine as follows (24 hr. samples):

March 21.— $\frac{1}{2}$ gram per 100 c.c.

March 22.— $\frac{1}{4}$ gram per 100 c.c.

March 23.— $\frac{1}{4}$ gram per 100 c.c.

March 24.—Only a very slight trace of albumen.

March 25.—No albumen.

March 26.—No albumen.

On the 21st and 22d the subject showed puffiness of the eyelids and swelling of the face, which was so perceptible as to cause comment by people who were uninformed regarding the treatment of the subject.

On the 27th the morning urine was free from albumen and at 11 a. m. 1,000 c.c. of cider, containing 1 gram of added sodium benzoate (0.1 per cent.) were taken.

Previous to taking the adulterated apple juice, the pulse was 98, the temperature 98.2, and the specific gravity of the urine 1.010; 45 minutes after taking the adulterated cider the pulse was 104, the temperature 98.9 and the specific gravity of the urine was 1.030.

It had been frequently noted in other subjects that when benzoic acid was ingested a primary heightening of temperature occurred shortly after its ingestion, followed by a prolonged reduction of temperature and irregularity of the pulse. Albumen was present in the subject's urine for the next four days (no benzoate given) during which time the subject did not feel very well. From April 1st to 5th daily observations were made on urinary volume, specific gravity, albumen, reduction of Fehling solution, indican and reaction. (See Table II.) The amount of urine secreted from 10 p. m. April 5th to 9 a. m. April 6th was 330 c.c.

TABLE II

Subject M. G. H. No. III. Date, 1909.	Sod. B. Dose gram.	Adminis- tered in 0.2% HCl c. c.	Volume C. C.	Sp. G.	Albumen gram. per 100 c. c.	Fehling s. uction.	ndican reaction.	Reaction to litmus acidity.
April 1.....	0	0	1250	1023	0	0	Normal.....	+ — —
April 2.....	0	0	1100	1022	0	0	Normal.....	+ + +
April 3.....	0	0	1156	1021	Trace	0	Normal.....	+ — —
April 4.....	0	0	1150	1020	.....	*	.....	.....
April 5.....	0	0	1150	1020	.....	0	Normal.....	+ + +
Average.....	.....	.....	1187	1021	+ trace	No reduction	Normal.....	Acid.
April 6, 9 A. M.....	0	0	330	1017	0	0	Normal.....	+
April 6, 11 A. M.....	1	50	.....	.....	.....	.....	Normal.....	+ + +
April 6, 4 P. M.....	.....	.....	200	1027	1-16	Reduction.....	.....	.....
April 6, 5 P. M.....	1	50	.....	.....	.....	.....	.....	.....
April 6, 8 P. M.....	0	0	95	1025	.....	Reduction.....	Normal.....	+ + +
April 6, 10 P. M.....	0	0	110	1027	.....	Reduction.....	Normal.....	+ + +
13 hours.....	2	100	405	Av. 1026	Gt. excess	Reduction.....	Normal.....	Increased acidity.
Total, 24 hours.....	.....	.....	735	1023	Gt. excess	Reduction.....	Normal.....	Increased acidity.
April 7.....	0	0	1500	1027	Trace.....	Reduction.....	Normal.....	+ + +
April 8.....	0	0	1200	1027	Trace.....	Reduction.....	Normal.....	+ + +
April 9.....	0	0	1300	1017	Trace.....	0	Normal.....	+ + +
April 10.....	0	0	1250	1021	Trace.....	0	Normal.....	+ + +
April 11.....	0	0	900	1020	0	0	Normal.....	+ + +
April 12.....	0	0	.....	.....	0	0	Normal.....	.....

* Total twenty-four hours not saved but samples showed no albumen.

No albumen present, specific gravity 1.017. At 11 a. m. on the 6th, 1 gram of sodium benzoate was given in 50 c.c. of 0.2 per cent. H Cl and the dose was repeated at 5 p. m. The volume of the urine was markedly decreased, the volume for 24 hours including the 330 c.c. passed previous to the dosage amounted to only 735 c.c. as against a daily average of 1,187 c.c. on four previous days. The specific gravity was markedly increased, and albumen appeared in large amounts within a few hours after the first dose and was increased by the second dose, and continued present for five days when it again disappeared. The movement of the bowels was normal on the morning of the 6th before the benzoated cider was taken, but the bowels were constipated for the subsequent five days. (See Table II.)

At this point in the experiments the subject was compelled to give up his work on account of the illness of a member of his family whom he nursed constantly, and he was unable systematically to observe his own condition. He informed me, however, that about one week later, at the end of a thirty-six hour period of work, a specimen of his urine did not show any albumen.

DISCUSSION

The results of this investigation show that sodium benzoate is a poor preservative under some conditions. My observations in this regard confirm the findings of Lehmann and others.

In experiments in which I took sodium benzoate in milk, which I ingested from time to time during meals, there was a feeling of malaise. The ingestion at the beginning of meals of acid foods, however, such as tomato soup, plums, peaches, etc., containing added benzoate, was followed in a few days by sharp pains, which set in about thirty minutes after meals and continued for one or two hours. These pains were aggravated by any muscular effort such as the carrying of a heavy satchel. I, therefore, returned to the previous method of ingesting the benzoate, i. e., in milk. The symptoms of gastric irritation then gradually entirely disappeared, in spite of the fact that about three days afterward the dose of benzoate was increased from 2.5 to 3 grams per day for three days. During the succeeding three days, the daily dose increased to 6 grams, taken on a full stomach in milk, without

slightest discomfort. As I desired to continue the work until it was completed, I did not repeat the ingestion of large doses in acid food.

The important general difference between my results and those of some previous reports is due, I believe, to the fact that in this research free benzoic acid was the active factor (whereas in others the benzoate may not have been appreciably decomposed into the free acid, or was accompanied by materials which rendered the benzoic acid relatively inert), which was taken in a way quite connatural to the usual ingestion of certain fruit juices, i. e., apple juice, grape juice, raspberry juice, etc., especially recommended for individuals with kidney affections, because of the absence of any natural benzoic acid.

Such a deduction is in harmony with what we know of the comparative effects of salicylates and free salicylic acid, for example; the acid is much more irritating in its effects than the salt.

Sodium benzoate is effective as a preservative when it yields free benzoic acid. The influence of benzoic acid is, therefore, the essential question in a study of sodium benzoate as a preservative.

Further investigation is contemplated, especially on the influence of nephrectomy on the toxicity of sodium benzoate and benzoic acid.

I am indebted to many of my associates in the Purdue University Alumni Association of New York City for volunteering as subjects in this investigation and thus making it possible for me to carry out experiments on a large number of individuals. The secretary, Mr. Leslie Huxtable, Mr. Ray C. Ewry, Mr. R. W. Parks, Mr. F. M. Walts and Mr. H. Worsham of that organization have given me special assistance in various ways. I am also indebted to Drs. A. E. Olpp and Matthew Steel and Messrs. Herzfeld and Bisch for co-operation, and to Drs. Foster, Mosenthal and Rosenbloom for assistance. Professor Gies has given me all the facilities of his laboratory for conducting this research, as well as valuable criticism and suggestions.

DISCUSSION

PROFESSOR V. J. CHAMBERS of The University of Rochester — Before starting the discussion of this paper, as that is what I am to do, and not to give an independent paper, there are one or two points in Dr. Lucas' paper which I would like to be set right on. In his experiment on the cider with benzoic

obtained by the Referee Board; and I want to quote Dr. Lucas perfectly correctly here, and he says in this, which is a duplicate of what he has just given us, as far as this is concerned: "The important general difference between my results and those of previous observers is due, I believe, to the fact that in this research free benzoic acid was the active factor, whereas in the others the benzoate was not appreciably decomposed into the free acid or was accompanied by materials which rendered these benzoic acids relatively inert."

He claims, and justly, that in practice it is used in such more or less acid foods as tomato ketchup, cider, grape-juice, canned fruits, jams, lemonade and so forth. I do not know that he put all of those in, but those are the things in which we know it is used.

Now this claim of his rests primarily on the assumption that sodium benzoate administered in milk, as it was, to a large extent by the Referee Board, is still sodium benzoate after it has passed into the stomach and become mixed with the stomach contents; and that it is, therefore, in an entirely different state than if it had been administered as benzoic acid. That is the crucial point, it seems to me. The Referee Board gave the material in milk, which is not an acid food to any extent. He gave it in an acid food; as he says in the latter part of his paper, he believes the difference in the results to be due to the fact that he worked with it in a normal condition, such as is natural. I say that he says that by inference, but he does not state that. It must be so, however, as I have inferred from his paper. First, we have to examine whether this assumption is warranted. I will now show you such an assumption is entirely unwarranted by the known chemical and physical facts governing the case.

Professor Herter, of Columbia University, in his discussion of the work of the Referee Board, before the Denver meeting, above referred to, made the following remark: "Another reason why no investigation of free benzoic acid was undertaken, is because in normal stomachs secreting hydrochloric acid, it is likely that the liberation of benzoic acid from sodium benzoate takes place in the acid contents of the stomach, or, in other words, that this liberation of acid gives rise to conditions similar to those which would be obtained from the introduction of benzoic acid in small quantities."

Now let us examine the question from the chemical and logical standpoint. In the first place, benzoic acid is a very weak acid, and it could not exist as such, sodium benzoate in the presence of the stronger acids, in large amounts.

We then come to the question: Is there an acid present in that stronger than is present in the milk, and stronger than benzoic acid? There is.

We have the acid coming from three sources: First and most important is the gastric juice, which according to Wood, contains from one-tenth to three-tenth of hydrochloric acid; and according to other authorities, even higher. One giving it as high as .5. I have taken the least figures, those given by Wood, one of the professors who is looked upon as an authority. Then we have, according to Gambie, the fermentation process going on all the time in the stomach. Finally, there is acid taken in with the food, as no one takes a meal without getting more or less acid in the food. We find that there is a chance for the acid to get there in the stomach, and the fruit acids ingested in the meal must be considered.

Then we consider the next question: Is it there in sufficient quantity to liberate the benzoic acid? I think I can say it is.

Using the average data given by Wood, Gambie and others, we find there is sufficient gastric juice to free fifteen grams of sodium benzoate. Fifteen grams of sodium benzoate is the amount present in thirty pounds of food. We find by the same data, we find that there is fifty-two times as much as is necessary to liberate the benzoic acid. The claim that part or all of this hydrochloric acid is used up in combining with the protein of the food has no bearing on the question as these chemical combinations are so weak and of such an unstable character that water itself will accomplish a partial decomposition. The hydrochloric acid leaves the protein combination, and acts on the sodium benzoate. So you see, figuring from known data, we have enough acid in the stomach to effect this liberation.

I thought it wise to try it experimentally, and so I had it carried out under

my instructions. Two hundred and fifty cubic centimeters of good milk were treated with sodium benzoate. It was allowed to stand one-half an hour. It curdled at once under the influence of hydrochloric acid; and then the mixture was analyzed for benzoic acid by the usual method. We put in 12/100 of one per cent. of sodium benzoate, and we obtained as benzoic acid 10/100. I think that pretty well answers that question, that after the addition of the dilute benzoic acid, the preservative is there as benzoic acid.

In the light of the chemical and physiological facts given, we are forced to the conclusion that in the experiments of both the Referee Board and Dr. Lucas, the preservative was present in the milk in the same condition, namely, as benzoic acid.

The experiments being the same, then, as far as the actual condition of the preservative is concerned, we next turn to a comparison of them, as to which were carried out under the more normal conditions; which were the more comprehensive and thorough, and which were directed by men of greater experience in carrying out and interpreting the results of researches of this kind. The experiments of the Referee Board were carried out with as close an approach to the actual conditions of living as possible, so that if any unfavorable results should arise, they would have to be due to the only unknown factor in the experiment, namely, the preservative.

The experiments of the Referee Board were carried out in something of this order:

In the first place, the subjects were fed and a careful examination made of all body processes in order to find what the normal condition of the health of the individual was. Then they were given sodium benzoate, and a most exhaustive examination made to see whether that sodium benzoate had any effect upon the value of the food or disturbed in any way appreciable the body processes. Dr. Lucas's experiments he has outlined to you. His experiments on the group—I think Dr. Lucas made only one experiment—it was one evening's work in the administration of material. The experiment on that one particular individual which was recited in considerable detail, was carried out for a longer time, about two weeks, I think it was.

DR. GOLER—Mr. Chairman, this paper was not down for discussion.

DR. THOMAS—Now, as regards the comprehensiveness of the experiment. They carried out experiments for more than four months. As regards the question of whether those experiments were carried out under the most normal conditions, they gave the material in the food, and in the way we would get it. Whereas Dr. Lucas gave it in cider, not with meals, but after meals; and, although it may be the normal way of taking cider, it is not the normal way of taking sodium benzoate or any food preservative of that kind.

The Referee Board obtained no unfavorable results. Dr. Lucas did.

How shall we explain that? The material is the same in both cases, and yet in one case they got bad results, and in the other they did not. It seems to me Dr. Lucas's experiments can be explained on the assumption that it was not the preservative but the excessive amount of cider which his subjects took. I know some of us are very sensitive to the action of cider. I should myself be somewhat concerned about taking the large quantities which he administered.

On the result of albuminuria, he got albuminuria, with cider containing sodium benzoate. Now he did not get it with all of his people; and in the next case Dr. Smith of New York has had similar experiments, and reports no albumin. Dr. Herter obtained none. Dr. Wiley, in his study of sodium benzoate, carried out experiments for twenty days on six individuals, all of whom were fed sodium benzoate, and no albuminuria was noticed.

Now Dr. Lucas only got albumin in some of his cases. It seems to me that it was the excessive amount which he used. The whole question is—

DR. GOLER—The whole question is: Do we want benzoate of soda or any other such preservatives in our food?

THE CONFERENCE—No!

DR. GOLER—Then that is all there is to it.

THE CHAIRMAN—We will now hear from Mr. Harding—Professor H. A. Harding, of Geneva, on "The Control of a Milk Supply."

THE CONTROL OF A MILK SUPPLY

BY PROF. H. A. HARDING

Geneva, N. Y.

During the past five years there has been a growing interest in the subject of a better milk supply. In some of the larger cities this has led to an active study of the problem on the part of the health authorities but in the larger number of the medium sized and smaller cities of the State the milk supply has not been materially affected. This is largely due to the fact that the problem in the smaller cities is quite different from the one which is being solved in such cities as New York, Buffalo, Syracuse and Rochester and the experience gained in these larger cities is not easily applied to the smaller ones.

How shall we control the milk supply of the smaller cities? The true answer is that we can not control it. We might as well admit that to begin with. On the other hand, if we are tactful, we can so manage affairs as to rapidly improve it. Our ability in this respect is based on the fact that practically every one connected with the business is desirous of a better product and it only remains for us to so direct these forces that the proper end shall be accomplished.

In taking up this milk problem let us not forget that the milk business is a commercial proposition which must yield a reasonable profit to the milk man if it is to be run at all. To be a progressive dairyman, a man must be making something more than a bare living. A business man who is only making enough to keep body and soul together is not one with whom we can labor profitably in our progress toward better things.

Geneva has a population of about 14,000 and its milk is supplied by about 500 cows. The milk business gives employment to about 100 people. A modest estimate of the capital invested in the business is \$125,000.

Have we any other line of business in any of our cities with a capital of \$125,000 and 100 hands on the payroll where we would

undertake to arbitrarily dictate the details of conducting the business? In any similar case would we not consult with the management of the plant and confine our recommendations to a general statement of the end to be attained, leaving it to the business management to arrange the details? Do we so thoroughly understand the running of the milk business that we are in a position to draw up detailed statements of the way in which milk shall be produced which shall look sensible to the man who is actually in the business?

The two health departments which have been pioneers in this work in this State are those of New York and Rochester. If there are health officials in the State who are qualified to draw up directions for the production of sanitary milk it surely is the officials connected with these cities. It is a well known fact that New York city has met strenuous opposition in its efforts. A considerable part of the distrust which the farmers feel toward this department is due to a clause in their dairy regulations that the stables must be cleaned before each milking. That seems like a sensible requirement and one tending to sanitary condition if one is not familiar with dairy matters. Those who are familiar know that the removal of the manure in the morning creates such an odor as to make it desirable to delay milking for a considerable period. The effect of the regulation is to convince the producer that he is being dictated to by some one who knows nothing about the business and his tendency to co-operation is destroyed.

The Rochester regulations while good in the main require the rejection of the fore milk. Under conditions as they exist in the milk supply of Rochester there is practically nothing to commend this ruling while the producer is aggravated by the continued and really unnecessary loss of even this small part of his product.

If these departments with the amount of study which they have given to the subject make these untactful mistakes how much more shall we stumble in any attempts at direct regulation. In our attempts at improving the conditions of our local milk supply let us then start with the agreement that we will not attempt to specify the details of the business.

If we are to guide the milk business of our communities into higher and cleaner channels there are a number of things which we must remember:

1. That the law of supply and demand is fundamental to every business proposition. In the past it has been practically impossible for the consumer to know anything accurately concerning the sanitary quality of the milk which is on the market. If you can furnish him with this information it will be a long step in assisting him to get the best article which is to be had at the common price. If the facts of the local market can be made clear to both the producer and the consumer the law of supply and demand will regulate both the quality and the price.

2. That each milkman has a natural pride in the reputation of his product and in a community where each consumer knows something of the producer this is an efficient lever in improving quality.

3. If we are to obtain and hold the confidence of the producer we must serve his real interests as carefully and faithfully as we do those of the consumer.

4. That much of the injury to the milk occurs because of the ignorance of the milkman. We should strive to lead him kindly to a knowledge of better things.

5. That clean milk is not a commercial possibility at present. Really clean milk under present conditions costs about fifteen cents a quart to produce and at this figure it is an impossible commercial article. Let us strive to see that our local supply gradually becomes less dirty than at present. The dirtier the present conditions the easier it will be to start changes for the better.

6. That it is illogical to expect to raise the entire local milk supply to a dead level of quality. There are the same reasons for different grades of milk as for different grades of cotton cloth. Any one who has thought on the subject recognizes that a higher sanitary quality is desirable for feeding babies and invalids than for cooking purposes. While the amounts of fat are somewhat important from the food standpoint the main differences in the milk supply lie in the presence of varying amounts of cow dung and of germs of animal diseases. Let us help the public to determine the real quality and buy intelligently. It is, of course, understood that we should cut off at once any milk which has been exposed to diseases such as typhoid or diphtheria, but the tuberculosis situation is too complicated to permit us to act so summarily in this case.

In order to make these statements more clear in their application let me call your attention to the way they were applied at Geneva. This is a city of about 14,000, with a mixed population, largely engaged in manufacturing. Our first step was to call the milkmen together and explain that we did not intend anything revolutionary, but that we intended to put the facts regarding the production of milk squarely before the public after we found out what the facts really were. They were at liberty to produce milk in practically any way they wished, but were not to take it unkindly if we later reported their carelessness to the consumers.

The next step was to get an inspector and we had the usual struggle with the civil service commission, and drew a man who knew from which end of a cow milk was to be expected, but that was about the limit of his practical knowledge of sanitary dairying. He was a good, bright fellow and after some training came to do his part very well. He is now attending the Dairy Short Course at Cornell University and will be in condition to be of real assistance in the work. If we are to get good results from this dairy supervision it must be done by some one who really knows something more than the general principles of the business and we shall have to look to the Cornell Dairy School for our men in most cases. I know of no other place where a man can get such training. It will cost him about \$75 for the course.

The next need is for a simple basis for expressing the results of the inspection — a score card. There are three or four score cards in use and the object of all of them is to express in a comparative way the actual conditions to which the milk has been exposed. None of them are perfect and any of them are usable. My preference is for the Cornell Score Card, devised by Professor, now Commissioner, R. A. Pearson. A copy of this card is here given and samples may be obtained from the dairy department, Cornell University.

DEPARTMENT OF DAIRY INDUSTRY, COLLEGE OF AGRICULTURE, CORNELL UNIVERSITY
Score Card for Production of Sanitary Milk

Date.....		Dairy of		P. O.	
I. Health of the herd and its protection.	Health and comfort of the cows and their isolation when sick or at calving time..... Location, lighting and ventilation of the stable..... Food and water..... Total.....	Perfect.	Score.	Remarks.	
		45			
		35			
		20			
		100			
II. Cleanliness of the cows and their surroundings.	Cows..... Stable..... Barnyard and pasture..... Stable air (freedom from dust and odors)..... Total.....	Perfect.	Score.		
		30			
		20			
		20			
		30			
		100			
III. Construction and care of the utensils.	Construction of utensils and their cleaning and location and protection..... Total.....	Perfect.	Score.		
		40			
		25			
		20			
		15			
		100			
IV. Health of employees and manner of milking.	Health of employees..... Suits and milking with relation to cleanliness of the foremilk..... Total.....	Perfect.	Score.		
		45			
		30			
		25			
		100			

V. Handling of the milk.	Prompt and efficient cooling.....	35	.....	.....
	Handling milk in a sanitary room and holding it at a low temperature.....	35	.....	.....
	Protection during transportation to market.....	30	.....	.....
	Total.....	100		
	Total of all scores.....	500		

If the total of all scores is		And each division is	The sanitary conditions are	
480 or above.....	90 or above.....	Excellent.		
450 or above.....	80 or above.....	Good.		
400 or above.....	60 or above.....	Medium		
Below 400.....	Or any division is below 60.....	Poor.		
The sanitary conditions are.....		Scored by.....		

A BRIEF DESCRIPTION OF WHAT CONSTITUTES PERFECT UNDER EACH HEADING.

- I. *Health* — No evidence of chronic or infectious disease or of acute disease in any member of the herd on the dairy premises. Freedom from tuberculosis proven by the tuberculin test made within one year.
Comfort — Protection from weather extremes. Stall comfortable — at least 3 feet wide for a small cow, or $3\frac{1}{2}$ for a large cow; length of stall sufficient for cow to rest easily. Sufficient bedding. Frequent outdoor exercise.
Isolation — Removal of cows to comfortable quarters outside of the dairy stable, when sick or at calving time.
Location of Stable — Elevated, with healthful surroundings.
Lighting — As light as a well lighted living room, and with not less than four square feet for light from the east, south or west, for each cow.
Ventilation — An adequate ventilating system of the King or other approved pattern, and, except when the stable is being cleaned, no marked stable odor.
Food — Clean, wholesome feeding stuffs, fed in proper quantities.
Water — Clean, fresh water, free from possibility of contamination by disease germs.
- II. *Cows* — Cleaned by thorough brushing, and where necessary by washing; no dust nor dirt on the hair (stains not considered). The udder thoroughly cleaned by brushing at least thirty minutes before milking, and by washing just before milking, leaving the udder damp to cause dust to adhere.
Stable — Free from accumulation of dust and dirt except fresh manure in the gutter. Apart from horses, pigs, privy, poultry-house, etc.
Barnyard and Pasture — No injurious plants, no mudhole nor pile of manure or any decaying substance where cows have access.
Stable Air — Free from floating dust and odors. Tight partition or floor between the space occupied by cows and that used for storage of feed or other purpose.
- III. *Construction of Utensils* — Nonabsorbent material and every part accessible to the brush, and, except inside of tubes, visible when being cleaned.
Cleaning — Thorough cleaning with brush and hot water, and rinsing. No laundry soap. Thorough sterilization.
Water — From a source known to be pure; protected from contamination from seepage, or surface drainage.
Care of Utensils — Such as to avoid contamination by dust as well as coarser dirt.
Small-top Pail — With opening not over seven inches in diameter, and at least one-third of this opening protected by hood.
- IV. *Employees* — Free from contagious disease and not dwelling in nor frequenting any place where contagious disease exists.
Milking Suits — Freshly laundered and clean; ample to protect from dust and dirt from the milker's person or clothing.
Milker's Hands — Hands and teats dry when milking. Hands thoroughly cleaned before milking each cow.
Milking Quietly — So as to avoid dislodging dirt from cow's hair. At least four streams of foremilk from each teat to be discarded into a separate vessel.
- V. *Cooling* — Cooled within fifteen minutes of milking, to temperature below 45 degrees F.
Handling — In a room used exclusively for handling milk, and free from dust, dirt and odors; and the milk after being cooled, always at a temperature below 45 degrees.
Protection During Transportation — Protected from dirt by tightly closed receptacles, temperature always below 45 degrees F.; not delayed in transit, reaching market within twenty-six hours after milking.

Of course this card would not be usable in the hands of an inspector who knew nothing about it and Professor Pearson prepared a folder for the use of the inspector. On this folder were questions which could be easily answered by any intelligent person. The inspector filled out these blanks at the farm, and in the first case gave the farmer a copy so that he should know just what the inspector was sending in. This was to forestall any misunderstanding and pacify the farmer, for it was painfully evident that the inspector was green at the business.

From these reports the score cards were filled out in duplicate, one being sent to the producer. Each bore a list of the items cut and at the bottom the statement that "errors and omissions would be cheerfully corrected." Thus each producer knew just where he stood and why he was there. Getting at the fact was the first step toward improvement. An item of "Manure on cows, cut 10 points" was perfectly clear and the man knew that if he did not want the cut next time he must remove the manure.

You will observe that the dairies are to be graded into Excellent, Good, Medium and Poor, depending on the score. When we began in September, 1907, there were none excellent, 2 good, 23 medium and 15 poor. I think that this is about as good a showing as could be expected of the average city supply in the State at that time.

Another meeting of the producers was called and the general situation explained to them and their co-operation asked in bettering conditions. They were told that every time that the basis of a cut marked on the score card against their dairy was removed their score would profit by it. The places were pointed out where the greatest gain could be made at the least expense, and they were promised a reasonable time in which to make the improvements before their score should be made known to the public. The time for the annual contracts between the retailers and the producers was drawing near and it was suggested that the scoring and the score card could be used as a basis for making contracts because before the end of the coming year the public would be informed of the score of all of the milk delivered in the city.

The response to this offer was quick and decided. A large number of the producers had evidently wished to make a better article and believing that if the quality of their goods was to be fairly put before the public they would get a price which was right, they

rapidly improved. The contracts between the producers and the retailers were all on the basis of three cents wholesale and the milk was retailed at six cents.

After practically a year in which to adapt themselves to the new condition of things the ratings of all of the producers were given to the public along with the name of the retailer so that the consumer could know the character of the milk he was buying. At the time of first doing this there was some protest from some who had not taken the matter seriously up to this point. They were few in numbers in comparison to those who had worked hard to get their dairies in good condition and have a good rating and after the first time everyone seemed satisfied with the quarterly report of all of the dairies.

The general effect of this system on the milk supply at the end of two years is shown by the report for September, 1909, which shows 3 dairies excellent, 29 good and 3 medium. The poor class has disappeared and the three medium are so near good that the medium class will probably soon disappear. The producers appear to be satisfied, as they are now receiving three and one-half cents wholesale and milk is retailing at seven cents per quart.

The most gratifying part of the situation is the fact that the results have been reached practically without any hard feeling and without any force being exercised. Our milk ordinances only cover a single page of our little book of ordinances and all they say is that milk must not be bottled on the street, milk tickets shall not be used a second time, and all retailers must have a license. We recognize the fact that we have no authority outside of the city limit and that our inspection of the farms is a mutual courtesy. It is the only way we can get the facts and the producers cannot sell their product without it since we grant a license only to retailers of the product of inspected dairies. We have relied on the law of supply and demand to do the work and it has surprised us at the results.

Do not gather from this that the milk problem is solved. Our milk is immeasurably better than it was, but it is still far from ideal food, especially for children. Only three out of thirty-five dairies have been tested for tuberculosis, so that on that point we have made hardly more than a beginning.

time ago, and after his report was made public one of the milk producers said, that in order to follow out the ideas of Dr. Sadtler, "I would have to charge twelve cents a quart for my milk." I said that if he could furnish twelve-cent milk I would furnish the consumers for it. I think it would be well if a circular was made out, explaining what we would like the farmers to do to improve the condition of their output. The farmers do not understand the score-card, and the State Department of Health, if it placed those in the hands of the health officers, would help us very much to attain the ends to be desired.

THE CHAIRMAN — We will open the discussion, but not for more than five minutes.

DR. ——— — I believe the milk is in the condition these gentlemen represent, but I want to call attention to some facts which have come under my own observation with many families, in connection with milk. I have known cases in regard to cholera infantum. The mothers failed to understand what was the trouble. They do not know enough to sterilize the bottle. The bottle is used two or three times without anything being done with it. They do not know enough about rinsing, or putting it in hot water and then putting it in the sunlight, and then cleanse it every time it is used.

DR. ——— — I wish to say to this convention, that I am not only the health officer of our town, but I am a producer of milk for the New York market. I acknowledge all that has been said in regard to the standpoint of the sanatorium, and it is good; but I would like the public to understand that we cannot produce such milk as that, such milk as is called for at the very small price we receive for it. We cannot, at the price we receive, give the milk which the theorists lay down for us to-day. Unless the public can be shown that they must pay a reasonable price, they will not get good milk. Professor Harding's address was the only sensible address which I have heard on the matter of production, as he not only tells what the producer should be made to do, but he also speaks of some of the conditions under which the producer labors. I am producing milk now for one and one-half cents a quart, that sells for eight or nine cents a quart in New York. I am paying more for feed to produce that milk by practically double any sum that I have paid in years past. That is, in the last two years the price of feeds has about doubled. That is all the point which I wish to make, and it is a point which must be met if the public is to insist on getting pure milk.

DR. YOUNG — I think we had better look after the feed as well. I have a case of a child nursing from a bottle, and it was not until I took her off the food she was having and put her upon ordinary food that she got well. The stomach had lost the power to establish a proper relation between the component parts. I think when we take the sterilizing milk and putting in benzoate of soda in food, I think some of the living germs in the milk are necessary to promote good digestion.

DR. GOLER — Mr. Chairman, the gentleman that produces one and a half cent milk should get only a cent and a half for it. That is all there is to that. The subject of milk production can be simplified if we could enforce the law. But unfortunately we live in a country where law is made only to soothe. It seems to me there are two standpoints from which we can attack this question, one from the producer and the other from the standpoint of the baby, that is the potential citizen of the State. And it seems to me that the baby has a certain inalienable right to pure milk; and we must see that the child gets what it should have.

The question of milk in cities, whether small or large, when we began our work here forty years ago, it was then a serious problem. To-day it is different. Now what we want in every city is clean, cold milk from tuberculine-tested cows, and I do not believe it is necessary that we, as yet, have to pay ten or twelve cents a quart for milk. It is perfectly possible to show the producer of milk something about what to do with what he has. If we

had in our health organization sufficient men to go out as teachers among the milk producers of the State we would be able to show these men by teaching, very soon, that they could produce milk to be sold in cities like Geneva at eight cents a quart with profit to the milkman and with little additional expenditure of money on the part of the milk producer. That is one of the ways in which the whole milk question is to be decided. To have the man taught what to do with his stable; to urge him to build a higher house; to have him put in a small sterilizing plant, including a boiler, that should cost about \$40, and other small matters that he can put in for \$10, and he should be taught to clean the udder and the cow in a newer way, and get a moderate return for that expenditure. There are men doing that over and over again, and making a good respectable living, and they are selling their own products and getting eight cents a quart for it. That is as far as we can go to-day, but it will deal with the practical solution of the milk question, whether in small cities or in large cities.

THE CHAIRMAN — Our next speaker is Dr. F. Park Lewis, of Buffalo, who as you all know has done more than any other investigator in the United States for the suppression of ophthalmia neonatorum.

DR. F. PARK LEWIS — It is a long step from clean milk and benzoate of soda in food, to prevention of ophthalmia neonatorum. Dr. Goler said in respect to the pure milk supply that the child had a right to proper milk; I think we can add to that that it has a right, an inherent right, to the protection which we will ask for in this connection.

THE PREVENTION OF OPHTHALMIA NEONATORUM

BY F. PARK LEWIS, M.D.

Buffalo

If to any one of us were given the opportunity of conferring upon a human being a gift which would mean a lifetime of happiness and usefulness, and the absence of which would take from that life its brightness and joy — which would give to a fellow creature all of the possibilities, which you or I enjoy — but the deprivation of which would leave only helplessness and dependence — if in a word we could give or take that which would make or mar the entire career of one of our fellows, we would regard such a power as a gift of the gods and be thankful while we lived that we had been chosen to exercise it. Without our fully realizing its import, to each one of us who has the knowledge and the will to act in preventing the blinding of new-born babies is this gift given.

The employment of the right thing, in the right way, at the right time — which is just after the child is born — means seeing eyes. Its neglect may mean lifelong blindness. The failure to use the simple measures that are provided to save the child from blindness is almost always due to the fact that the gravity of the danger is not understood. So many children are born that are *not* infected that the attendant, whether doctor or midwife, grows to feel that much has been made of a little matter, that the infections are relatively rare, and that when they do occur they are easily controlled, and no special effort is made to protect the child's eyes. Then when infection does occur the inflammation which develops is supposed to be a trifling matter, "the baby has probably taken a little cold," then rapidly the inflammation becomes acute and help is wildly sought in every direction. The specialist is called who gives unremitting attention to the suffering child or, as happens among the less careful, the doctor thinks he himself can care for such a controllable infection and when skilled help is finally sought it is found that the damage is irreparable and the baby is hopelessly, incurably blind. That particular physician will probably in future be scrupulously careful in the management of the children whose

birth he attends, but another doctor in the next county or a midwife in the slums of a great city must have a like experience and, while the multitude of children escape, the aggregate of the occasional disaster constitutes a large group who struggle through life with defective eyes or are found in the schools for the blind.

In addressing the health officers of the State of New York, an honor which I assure you I appreciate, I do not hope to be able to present to you anything now touching upon this subject, but as officials of the State your opportunities are so unusual and the possibilities so great for helping in this campaign to save babies from blindness that I hope to emphasize some of the facts connected with this disease, and to ask you, whose experience is so broad and whose knowledge is so wide in matters pertaining to the public health, how a disease so disastrous in its results and yet so absolutely under control may be wiped out as a cause of blindness.

It is not my purpose nor would it be proper at this time and in this place to discuss the medical aspects of ophthalmia neonatorum. I need hardly say to you who are physicians what is common knowledge, that it is an infectious, preventable, and when taken sufficiently early, a curable disease, of new-born infants. When suitable prophylaxis — sanitary and medical — is not employed it becomes one of the most virulent of the inflammation diseases of the eyes. It menaces then not alone the eyes of the infant but the discharge, which is profuse and which is easily carried on the hands of careless or untrained attendants, if introduced into the eyes of an adult produces an inflammation of such a character, if unchecked, as to destroy the sight. It is curable at any time before the cornea is injured, and even then under right treatment the eyes may often be saved. It is sporadic and almost always comes from a previously infected mother. In a relatively small proportion of cases infection may be carried to the eyes of the child from outside sources. It occurs in various proportions in relation to the number of births according to locality in from one in fifty to one in two hundred cases. While it is more prevalent in the crowded districts where the poor live, it not infrequently develops in what is termed the highest social circles. It seldom occurs if one or the other of the parents has not become first infected. It need

rarely result in blindness if the proper preventive and remedial treatment are instituted sufficiently early.

The consensus of opinion is that the most efficient prophylaxis for the destruction of the infectious germs is one of the salts of silver and that which has been chosen for gratuitous distribution in this State, is one per cent. of nitrate. This when used according to specific directions may be employed with absolute safety in every normal new-born child. It produces a slight transitory conjunctival irritation which is termed silver catarrh. It is intended to be used as a prophylactic but once and that immediately after the birth of the child. Should infection develop notwithstanding its use, as sometimes happens, medical treatment should be immediately instituted. An essential is in keeping the eyes constantly cleansed from infecting discharges and the frequent installation of one of the less irritant salts of silver. This is always to be determined on the judgment of the attending physician. When this is done effectively and thoroughly it is the rarest exception that the eyes are lost. The exception does, however, occur and it must be borne in mind that sometimes, notwithstanding the exhibition of the highest skill and the most assiduous care, the disease will pass beyond control, and this very fact again emphasizes the wisdom and necessity of using local prophylaxis in every case.

The question is asked, Are these infections of such frequency and is resultant blindness so common as to warrant the concerted movement that is being carried on in the State and nation for its control? Before I answer this question let me say that not only those who are made blind suffer from this disease. A vastly larger number are those who have had corneal ulcers which have healed leaving scars which have given defective vision, limiting the usefulness of those so affected by numbering them among the partially blind. Of these we have no count. Indeed we have most imperfect records concerning the relative incidence of this disease. We have no records of the cases that occur in private practice. The limited reports from the hospitals are of little value, and no reports are made of the final condition of eyes treated for ophthalmia neonatorum in the various dispensaries.

Cohn, fourteen years ago, stated that in Breslau 2 per cent. of the children born were infected, while Harmon in his excellent

little monograph on "Preventable Blindness"—published two years ago, after many figures which I will not quote, says that they point to the conclusion that in London among every one hundred children born one child suffers from inflammation of the eyes, and of every two thousand children born one is blinded for life. Closely in harmony with these figures were my own imperfect investigations made in the city of Buffalo two years ago. We have reason to believe that the percentage of infection in greater communities is much the same.

Gonorrhœa as estimated by Noggerath is found in 80 per cent. of women as a result of the fact that it is or has been present, in large cities at least, in 90 per cent. of the men. It is not to be wondered, therefore, that the gonococcus causes about 66 per cent. of the infections of the eyes of the new-born. Naturally the largest number of the cases of resultant blindness is aggregated in the schools for the blind. The number of pupils registered at Batavia is about one hundred and fifty, while in the School for the Blind in New York City the registry includes about twice that number. The average number of those in Batavia who have been victims of ophthalmia neonatorum has been about 25 per cent. and as this has been the usual average in all of the schools for the blind in the United States in which careful examinations are made, we may safely assume that in the school in New York City, in which no records are made of this disease as a causative factor of blindness, that the same proportion will be found. These blind, accumulating year after year in the two schools under the State control, in one year, 1907, numbered about one hundred children, and the amount paid for their maintenance by the State was over thirty thousand dollars.

It has been estimated that of the blind in this State over six hundred owe their blindness to birth infections, and \$110,000 is annually paid for their support. It will be evident, therefore, that not only on the grounds of humanity but as an economic proposition, it would pay the State to stop the blinding of its infant citizens.

In order to determine the actual conditions which existed in Boston, the Massachusetts Commission for the Blind secured the appointment of a visiting physician, in connection with the Eye

Infirmary, who went to the homes from which the birth-infected children came. These are some of the facts that were discovered.

The little children, the story of whose blindness is given below, were all born in Massachusetts since 1904. Had their eyes when first they became inflamed been promptly and properly treated, they would be seeing to-day instead of tragically handicapped.

A little four-months old baby whose mother is only nineteen is blind because the doctor did not know the proper treatment for the eyes. The child will always be a charge upon the State. The mother has been deserted by her husband, and her burden is doubled by the fact that she cannot look forward to being supported by her son in after life, as she might if he were a seeing child.

A French-Canadian baby a year old might have been saved from blindness if the doctor's repeated warning that he should be taken to a hospital for continuous care had been obeyed. But the friends were careless or ignorant and when finally they took the child to the hospital when three weeks old, it was too late — a pitiful case, as the young mother must bear the whole of its support.

A little French-American child of nearly two years is starting life wholly blind because of the neglect of the doctor who attended the mother at birth. The home is poor, the mother supporting the family. The baby must be brought up in an institution.

A baby, an only child, with one eye blind and the other badly scarred must be educated as a blind child. The attending doctor thought that the eyes "would get well by themselves."

A child of four years, bright and attractive, with a comfortable, happy home, has been totally blind since the first week of her life. Her mother was very ill at the time of her birth and the baby's eyes were neglected by those in charge. It was found necessary to remove one eye, making her appearance the more pitiful. All her life she will require special training. She might have taken her place among seeing children with a promising future before her, but someone was careless and the loss is irreparable.

An orphan girl, eight years old, is so small and feeble and puny that she looks three years younger. The disease not only destroyed her sight, but it left her eyes in an unsightly condition. She has no relatives and will be a ward of the State.

A child of Austro-Hungarian parents who speak no English was found in her home not far from Boston looking pale and thin, never having been out of doors. It has been found necessary to remove one of her eyes and the other is wholly without sight. She is six years old and will probably be a charge upon the community for life.

An orphan boy living with friends has one eye removed. With the other, though badly scarred, he sees slightly and his friends hoped that he might be educated as a seeing child; now at seven it has become clear that he must be sent to a school for the blind.

A girl of fourteen has lived within a few miles of Boston all her life but cannot read or write because her parents refused to allow her to go to a school for the blind. She is now at least seven years late in beginning her education, while her seven brothers and sisters, who are normal boys and girls, have attended the public schools all their lives.

The persons mentioned below are those who have been blind through a long life.

Fifty years ago a little girl in a comfortable American home was left motherless and blind soon after birth. From the age of six to that of twenty-three the greater part of her life was spent in a school for the blind. She went out well fitted as a music teacher and ambitious to earn her living. As a blind woman, however, homeless, without relatives and not strong, she found herself unable to compete in the struggle for a livelihood and now, at fifty, she is disappointed, lonely and, except for bits of crocheting and knitting, forced into idleness. She has moved from one boarding-place to another, striving to be cheerful, though she has been obliged to live a life of idleness and darkness instead of the life of activity and usefulness she might have had if her eyes had not been neglected at her birth.

A woman of forty-five, totally blind all her life, was educated for seven years at a school for the blind at a probable expense to the State of \$2,000; but though bright, vigorous and cheerful, no work could be obtained for her at which she could earn her living. Private and public charity have helped her by turns, and she has done everything in her power to be useful where she has lived,—sometimes with friends, sometimes in public institutions, but middle age has found her in one of our large almshouses.

The children whose condition is suggested below will always suffer greatly from the effects of ophthalmia neonatorum. They are not technically blind, but are handicapped even to the extent of the loss of one eye. Some are on the border line of blindness and may, after much distressing experimentation and delay, have to be educated among the blind.

A little Irish girl, whose mother of eighteen years has been deserted by the father, has the sight of one eye destroyed. Soon after birth friends, on the advice of the doctor, took her to a hospital but were afraid to leave her there. A week after, when they brought her back, one eye was totally blind.

Another little Irish girl living in a comfortable home escaped

blindness but has a large unsightly scar on one eye because the treatment which the doctor gave her was insufficient.

A Syrian child has both eyes badly scarred, injuring both her sight and her appearance.

The parents of an Italian baby were urged by the doctor who attended its birth to take it at once to the hospital. They delayed until too late and the sight of one eye was destroyed.

Another little Italian baby has his eyes scarred so badly as seriously to interfere with his sight because the midwife did nothing herself for his eyes and did not advise a hospital. (There is no doubt that if careful investigations were made in the State of New York we would find, especially in the congested centers, a like series of cases in which a little care would have saved many babies from such tragic results.)

If it is admitted then, and it cannot be doubted, that blindness is still being produced as a result of birth infections, what must be done to prevent and control the ophthalmia of the new-born?

In our efforts to save the eyes of the children emphasis has not, heretofore, been placed upon the fact that had not the mothers been previously infected the number of cases in which the children would be in danger would be few indeed. Touching on this subject in a recent address on the Blindness of the New Born, Dr. Prince A. Morrow of New York says:

In the praiseworthy crusade against preventable blindness undertaken by the New York Association and other organizations efforts are chiefly directed to the recommendation of the employment of the Crede methods in all cases of child-birth, while the responsibility for blindness is squarely placed upon the shoulders of physicians and midwives for neglect in employing this method. I would not criticize the motives of the public-spirited men and women engaged in this noble work; but I would honestly question the wisdom of a policy which deems it inexpedient to enlighten the public as to a knowledge of the nature of the infection which causes blindness, and the condition under which it occurs, and thus place the responsibility where it belongs. The cause, communicative mode, and consequences of this infection may be traced step by step. In a vast majority of cases it has been contracted by the father of the child in licentious relations either before or after marriage, and communicated to the mother, who is made the passive and unconscious medium of instilling the virulent poison into the eyes of her own child.

Wider knowledge concerning the cause of birth infection

The public should be taken into our confidence in regard to ophthalmia neonatorum, as it has been in tuberculosis, and it will prove to be an able ally in our struggle to get it under control.

The second step is statistical. In an infectious disease, which is liable to make its victim a public charge, the State has a right to know of its existence when it occurs. It is not necessary that the house be placarded, nor that the records be open to public inspection, but the fact of simply reporting the case, the statement having been previously made, in the birth certificate, that a prophylaxis had or had not been used will emphasize both to the physician and to the family the importance of the condition and will impress upon both the necessity of active and effective measures. It will also enable the department to quickly get in touch with those requiring assistance, and give help when it is needed.

It was found in the city of New York that many children died during the first days or weeks of life from inadequate care before the report of the birth had reached the Health Department.

Last summer a new measure was inaugurated and a visitor was sent at once in the poor districts to see the mother and the child, who were often left without any attention after the departure of the midwife or the tenement-house doctor. Necessary advice was given in regard to the care and feeding of the child and if ophthalmia was present the child was placed under the proper medical treatment. The result was a lowering of both morbidity and infant mortality, and the children were saved in some cases from what would have been inevitable blindness. Having some such course as this in view an enactment was passed in the last session of the Legislature reducing the time in which to report births to thirty-six hours. This was following a plan recently adopted in England, but was not completely carried out.

Unfortunately this early notification was not made to apply to the greater cities of the States, the very centers where it can be most effectively employed. It is sincerely to be hoped that at the coming session of the Legislature this defect may be remedied and the thirty-six hour registration law may be so amended as to apply to the entire State.

1 *Educational:*

By constituting each of the 1,200 health offices of the State local centers for the dissemination of knowledge both to the medical profession and the lay public concerning birth infections of the eyes of new-born infants.

2 *Statistical:*

Securing data regarding the incidence and results of the disease everywhere in this State; individuals as well as hospitals should make periodical reports. This can easily be done when its importance is recognized.

3 *Legislative:*

a Securing the enactment of an amendment making universal throughout the entire State the application of the thirty-six hour notification.

b Securing the adoption of a uniform law governing the licensing and practice of midwives.

4 *Executive:*

By securing for the infected children immediate treatment as is now done in New York City. This would be possible if births were registered within thirty-six hours, and would so limit the ravages of the disease as to practically wipe out ophthalmia neonatorum, as a cause of blindness in the State of New York.

DR. J. W. KNAPP, Canastota —After the exhaustive paper by Dr. Lewis there seems little for me to say on the subject of ophthalmia neonatorum prevention. It seems to be well established that over 30 per cent. of the cases of blindness in our institutions for the blind are due to ophthalmia neonatorum, and that they would have been prevented had suitable measures been taken for their prevention.

It is not safe for any physician to say that because he has not had cases that he will not. The festive gonococcus is abroad in the land and may turn up where least expected. So when we have a harmless preventative it is our duty to use it. With our present knowledge it is as criminal not to prevent ophthalmia neonatorum as it is not to use anti-toxin in diphtheria.

The general conclusion concurred in by all authorities is that infections can with almost absolute certainty be prevented and in the rare cases in which the infection develops, early treatment almost certainly insures its cure.

THE CHAIRMAN — We will now adjourn sine die.

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Mrs. J. R. Davidson, South Bethlehem.
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Dr. C. T. Graham-Rogers, Albany.

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INDEX

	PAGE
Antitoxin Laboratory, report of director	317
Tetanus antitoxin	321
Births, registration of	72
Bright's disease, deaths from	236
Cancer, deaths from	209
Cancer Laboratory, report of director	381
City mortality from tuberculosis	201
from typhoid fever.....	224
Commissioner of Health, report of	1-54
Communicable diseases, report of division	259
cases reported during 1909.....	262
cerebrospinal meningitis	285
diphtheria	268
epidemic poliomyelitis	285
influenza	294
measles	278
ophthalmia neonatorum	291
pellagra	296
scarlet fever	273
smallpox	286
tuberculosis	262
typhoid fever	280
typhus fever	284
varicella	290
Conference of sanitary officers, annual	301
Diarrhea, deaths from	235
Diphtheria, deaths from	232
Financial statement	57
Hygienic Laboratory, report of	325
Analytical results of samples of water examined.....	326
Diagnostic work for 1909.....	349
Saratoga mineral waters, analysis of.....	373
Special investigations of epidemics:	
Clayton	362
Cornwall	370
Coxsackie	350
Watervliet (Fairview Home).....	354
Infant mortality	179
Marriages	73
Pneumonia, deaths from	235
Saratoga mineral waters, analysis of	373
Scarlet fever and measles, deaths from	233

	PAGE
Seasonal fatality from chief causes of death.....	112
Special report of Walter F. Willcox, consulting statistician.....	237
Tetanus antitoxin	321
Tuberculosis:	
campaign against	300
lectures	308
literature distribution	302
medical meetings	308
newspaper co-operation	302
reconstruction of exhibit.....	306
city mortality from.....	201
mortality from	197
Typhoid fever:	
city mortality from.....	224
Violence, deaths from.....	234
Vital statistics, report of director.....	71
births, registration of.....	72
city mortality:	
tuberculosis	201
typhoid fever	224
deaths from certain causes:	
Bright's disease	236
cancer	209
diphtheria	232
measles	233
pneumonia	235
scarlet fever	233
violence	234
death rate and per cent. of deaths at different age periods.....	111
from different causes.....	112
from principal causes in counties.....114,	158
deaths per 100,000 population, city and rural.....	113
by causes 1885 to date.....	177
infant mortality	179
marriages, 1907-1909	74
mortality by months.....	118
by sanitary districts.....	128
in cities	116
population and relative area of sanitary districts.....	180
registration by districts.....	76
of cities	75
since 1885	181
seasonal fatality from chief causes of death.....	112
special report by Walter F. Willcox, consulting statistician.....	237
summary of mortality for year.....	106
typhoid fever	222
Water pollution, effects of, as reflected in vital statistics.....	228

